IDAHO EMS

CRITICAL CARE TRANSPORT

CURRICULUM GUIDE

PREFACE

The Idaho EMS Bureau, in compliance with "Rules Governing EMS" has published this Critical Care Transport Curriculum Guide to serve as a minimum educational standard for EMS agencies licensed to provide patient care at the ALS Levels I and III. This document is for use by the EMS agencies as a tool to guide the design of, or assess, formal training programs and individual capabilities, as required when utilizing paramedics or Ambulance–Based Clinicians for Critical Care Transfers. The curriculum guide is a list of objectives by category, which has been peer reviewed to meet the needs of the critical care transfer patient in Idaho. The guide does not define the structure or process of a formal training program or evaluation process, but leaves this to the agency and medical director to establish at the local level. The objectives in this guide have been developed to allow standardization of the basic and fundamental knowledge necessary for ALS level agencies to provide the Critical Care Transfer level of service in concurrence with local medical director oversight and approval. The curriculum guide is not intended to be used to repeat original course material for paramedics and allied healthcare professionals, but to enhance it to meet the needs of the critical care transfer patients while being consistent with the scope of practice. Participation in a formal training program or meeting the objectives contained in the guide does not change the certification or licensure level of the provider. Critical care treatment may only be initiated by direction of the agency medical director or other physicians providing online medical control to the personnel functioning with an agency compliant with licensure requirements at the Critical Care Level.

For further assistance on the utilization and application of the guide, please contact the EMS Bureau office within your region.

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SECTION 1 Critical Care Overview

1.1. UNIT TERMINAL OBJECTIVE - Critical Care Overview

At the completion of this unit, the student will be able to distinguish differences between critical care methodologies and rationale from pre-hospital care methodologies and rationale.

1.2. COGNITIVE OBJECTIVES - Critical Care Overview

1.2.1 Explain the difference between pre-hospital and critical care transport medicine.
1.2.2 Describe the inception and history of EMT-Paramedic medicine.
1.2.3 Describe standards of care and criteria for critical care transports.
1.2.4 Compare and contrast standard equipment for ALS vehicles and that required for critical care transports.
1.2.5 Describe the responsibilities of the critical care transport dispatcher.
1.2.6 List key personnel required for a critical care transfer and their responsibilities before, during and after a critical care transport.
1.2.7 Explain critical care transport protocols and their purpose.
1.2.8 Describe priorities of patient care during a critical care transport.
1.2.9 Compare and contrast differences in pre-hospital and CC - transfer patient preparation including assessment and invasive monitoring needs.
1.2.10 Explain the role of medical control for critical care transports.
1.2.11 Identify the duties and origin of medical control for critical care transports for different types of EMS service configurations.
1.2.12 Explain the differences and purposes for on-line and off-line medical control.
1.2.13 Identify when transfer of medical control occurs.
1.2.14 List the documentation/patient records required before, during and after the transport including sending facility records, lab and imaging reports, etc.
1.2.15 Define the variables of medical necessity in relationship to documentation and mode of transport for critical care patients.
1.2.16 Describe assumptions regarding paramedics in the critical care environment by other health care professionals.
1.2.17 Describe assumptions regarding paramedics in the critical care environment by patient family members.
1.2.18 Describe the scope of practice as it applies to all levels of EMS providers in Idaho.
1.2.19 Describe the agency licensing requirements to provide critical care transport in Idaho
1.2.20 Describe the financial costs associated with a critical care transport.

1.3. AFFECTIVE OBJECTIVES - Critical Care Overview

1.3.1 Support the paramedic role in the critical care transport environment as a member of the patient care team.

1.4. PSYCHOMOTOR OBJECTIVES - Critical Care Overview

None associated with this section

SECTION 2 Legal and Ethical Aspects of the Critical Care Transport

2.1. UNIT TERMINAL OBJECTIVE - Legal and Ethical Aspects of the Critical Care Transport

At the completion of this unit, the student will be able to comprehend basic legal issues pertaining to critical care transports.

2.2. COGNITIVE OBJECTIVES - Legal and Ethical Aspects of the Critical Care Transport

2.2.1 Explain the legal definition and objective of an Advanced Life Support (ALS) ambulance service and the minimum qualifications of required personnel.

2.2.2 Explain the legal definition and the objective of a critical care transport ambulance service and the minimum qualifications of required personnel.

2.2.3 Describe the Idaho EMS service licensure requirements for critical care transfer designation.

2.2.4 Explain the legal definition of tort claim, lawsuit, complaint and discovery.

2.2.5 Explain the concept of jurisdiction as it applies to transports across state and national borders.

2.2.6 Compare and contrast the differences in the required documentation and record keeping for critical care transports and pre-hospital care.

2.2.7 Describe the *Emergency Medical Treatment and Active Labor Act* (EMTALA).

2.2.8 List three basic elements required of the transferring facility under EMTALA.

2.2.9 Describe the requirements and obligations of the sending medical facility under EMTALA.

2.2.10 Explain the role, requirements and obligations of the transport team under EMTALA.

2.2.11 Describe EMTALA requirements of the transporting team for the stabilized and non-stabilized patient.

2.2.12 Describe "Do Not Resuscitate Orders," the necessary requirements/conditions for "Do Not Resuscitate Orders" to be valid and the responsibilities of the transport team if "Do Not Resuscitate Orders" are in effect.

2.2.13 Explain the legal and ethical role and obligations of medical control in critical care transports.

2.3. AFFECTIVE OBJECTIVES - Legal and Ethical Aspects of the Critical Care Transport

2.3.1 Support the roles, requirements and obligations of the transport team under the EMTALA.

2.3.2 Justify the need for specialized personnel and equipment in critical care transports of neonatal, obstetric, pediatric and patients with special monitoring needs from the legal and ethical perspectives.

2.3.3 Support the risks and benefits of critical care transports.

2.4. PSYCHOMOTOR OBJECTIVES - Legal and Ethical Aspects of the Critical Care Transport

2.4.1 Demonstrate ability to complete required documentation before, during and after a critical care transport.

SECTION 3 Diagnostic Studies

3.1. UNIT TERMINAL OBJECTIVE - Diagnostic Studies

At the completion of this unit, the student will gain a fundamental understanding of diagnostic studies pertinent to critical care patients and their transports, and integrate diagnostic finding into patient care decision making.

3.2. COGNITIVE OBJECTIVES - Diagnostic Studies / Lab

3.2.1 Define sensitivity as it relates to diagnostic studies.
3.2.2 Explain specificity as it relates to diagnostic studies.
3.2.3 Explain the likelihood of disease value for diagnostic studies.
3.2.4 Explain the risks and benefits for performing diagnostic studies.
3.2.5 Describe normal and abnormal critical values, pathophysiology pertinence and abbreviations for the following laboratory blood chemistry tests:

a. CBC with differential
b. White blood cells by type
c. Neutrophils
d. Monocytes
e. Eosinophils
f. Basophils
g. Lymphocytes
h. Platelet count
i. Arterial blood gases
j. Potassium
k. Sodium
l. Chloride
m. Carbon dioxide
n. Blood urea nitrogen
o. Creatinine
p. CK
q. CK-MB
r. Troponin
s. PT
t. PTT
u. INR
v. Glucose (including normal value of infants and children)
w. Toxicology screen

3.2.6 Explain "shift to the right" and "shift to the left."
3.2.7 Describe normal and abnormal critical values, pathophysiology pertinence, and abbreviations for the following laboratory urine tests:

a. Urine output
b. Specific gravity
c. Presence of blood
d. Presence of glucose
e. Presence of ketone
f. Toxicology screen

3.2.8 Describe normal and abnormal critical values, pathophysiology pertinence, and abbreviations for laboratory guaiac tests.

3.2.9 Explain the purpose and relevance of the following blood chemistry diagnostic studies:
- a. Uric acid
- b. Chloride
- c. CO2
- d. Phosphate
- e. Calcium
- f. Total Protein
- g. Albumin
- h. Globulin
- i. Alkaline Phosphate
- j. Acid Phosphate
- k. Aspartate Aminotransferase - AST
- l. Lactic Dehydrogenase - LDH
- m. Bilirubin - total and indirect
- n. Cholesterol
- o. Triglycerides
- p. Amylase
- q. Lipase
- r. Magnesium
- s. Lactate
- t. Liver Enzymes including SGOT

3.2.10 Explain the purpose and relevance of the following urine diagnostic studies:
- a. Ph
- b. Protein
- c. Nitrite/bacteria
- d. Bilirubin
- e. Urobilinogen
- f. Microscopic examination

3.3. COGNITIVE OBJECTIVES - Diagnostic Studies / EKG

3.3.1 Compare and contrast EKG monitor and diagnostic modes.
3.3.2 Describe uses for multi-lead EKG.
3.3.3 Explain the expected location of coronary artery blockage from EKG changes.
3.3.4 Describe left ventricle posterior wall lead placement for - V_9, $V_{10.}$
3.3.5 Describe right ventricular wall lead placement for -V4R.
3.3.6 Describe the correct placement of modified chest leads -MCL_1 through $MCL_{6.}$
3.3.7 Identify improper lead placement by EKG interpretation.
3.3.8 Describe EKG changes seen in/with q waves and ST segment for subendocardial and acute transmural myocardial ischemia, injury and infarction in relationship to:
- a. Limb leads
- b. Chest leads

3.3.9 Explain EKG pattern for left and right bundle branch block.
3.3.10 Describe electrical axis deviation.
3.3.11 Identify the presence of bifascicular blocks (hemiblocks).
3.3.12 Define the expected dysrhythmias and dysfunctions expected with a given anatomical myocardial infarction.

3.4. PSYCHOMOTOR OBJECTIVES - Diagnostic Studies / EKG

3.4.1 Demonstrate the correct placement of 12 lead electrodes.
3.4.2 Demonstrate lead placement for posterior wall of left ventricle - V_9, $V_{10.}$

3.4.3 Demonstrate lead placement for right ventricular wall of right ventricle -V4R.
3.4.4 Demonstrate the correct placement of modified chest leads - MCL_1 through MCL_6.
3.4.5 Demonstrate accurate interpretation of a pediatric EKG.

3.5. COGNITIVE OBJECTIVES - Diagnostic Studies / Imaging

3.5.1 Describe how to identify a pneumothorax in a chest x-ray.
3.5.2 Describe how to identify chest consolidation in a chest x-ray.
3.5.3 Describe how to identify fractures in a chest x-ray.
3.5.4 List the cervical, thoracic, lumbar, spinal x-ray and CT scan criteria for clearing a patient of suspected spinal trauma.
3.5.5 Describe the identification of tube and catheter placement on x-ray

3.6. AFFECTIVE OBJECTIVES - Diagnostic Studies / Imaging

3.6.1 Support the use of diagnostic studies to direct patient care decision making.
3.6.2 Justify the cervical, thoracic, lumbar, spinal x-ray and CT scan criteria for clearing a patient of suspected spinal trauma.

3.7. PSYCHOMOTOR OBJECTIVES - Diagnostic Studies / Imaging

3.7.1 Demonstrate identification of a pneumothorax in a chest x-ray.
3.7.2 Demonstrate identification of chest consolidation in a chest x-ray.
3.7.3 Demonstrate identification of fractures in a chest x-ray.
3.7.4 Demonstrate identification of endotracheal tube placement on x-ray
3.7.5 Demonstrate identification of NG and OG tube placement on x-ray
3.7.6 Demonstrate identification of central IV catheters placement on x-ray
3.7.7 Demonstrate identification of urinary catheter placement on x-ray

SECTION 4 History / Communications

4.1. UNIT TERMINAL OBJECTIVE - History / Communications

At the completion of this unit, the paramedic student will be able to use the appropriate techniques to obtain a medical history from a patient and be able to integrate the principles of therapeutic communication to effectively communicate with any patient while providing care.

4.2. COGNITIVE OBJECTIVES - History / Communications

At the completion of this unit, the paramedic student will be able to:

4.2.1 Describe the techniques of history taking.
4.2.2 Discuss the importance of using open-ended questions.
4.2.3 Describe the use of facilitation, reflection, clarification, empathetic responses, confrontation, and interpretation.
4.2.4 Differentiate between facilitation, reflection, clarification, sympathetic responses, confrontation, and interpretation.
4.2.5 Describe the structure and purpose of a health history.
4.2.6 Describe how to obtain a comprehensive health history.
4.2.7 List the components of a comprehensive history of an adult patient.
4.2.8 Define communication.
4.2.9 Identify internal and external factors that affect a patient/ bystander interview conducted by a paramedic.
4.2.10 Restate the strategies for developing patient rapport.
4.2.11 Provide examples of open-ended and closed or direct questions.
4.2.12 Discuss common errors made by paramedics when interviewing patients.
4.2.13 Identify the nonverbal skills that are used in patient interviewing.
4.2.14 Restate the strategies to obtain information from the patient.
4.2.15 Summarize the methods to assess mental status based on interview techniques.
4.2.16 Discuss the strategies for interviewing a patient who is unmotivated to talk.
4.2.17 Differentiate the strategies a paramedic uses when interviewing a patient who is hostile compared to one who is cooperative.
4.2.18 Summarize developmental considerations of various age groups that influence patient interviewing.
4.2.19 Restate unique interviewing techniques necessary to employ with patients who have special needs.
4.2.20 Discuss interviewing considerations used by paramedics in cross-cultural communications.

4.3. AFFECTIVE OBJECTIVES - History / Communications

4.3.1 Demonstrate the importance of empathy when obtaining a health history.
4.3.2 Demonstrate the importance of confidentiality when obtaining a health history.
4.3.3 Serve as a model for an effective communication process.
4.3.4 Advocate the importance of external factors of communication.
4.3.5 Promote proper responses to patient communication.
4.3.6 Exhibit professional non-verbal behaviors.
4.3.7 Advocate development of proper patient rapport.
4.3.8 Value strategies to obtain patient information.
4.3.9 Exhibit professional behaviors in communicating with patients in special situations.
4.3.10 Exhibit professional behaviors in communication with patients from different cultures.

4.4 PSYCHOMOTOR OBJECTIVES - History / Communications

None identified for this unit.

SECTION 5 Adult Patient Assessment – Review of Systems

5.1. UNIT TERMINAL OBJECTIVE - Adult Patient Assessment

At the completion of this unit, the student will be able to perform a complete history and physical exam on the critical care patient.

5.2. COGNITIVE OBJECTIVES - Adult Patient Assessment- Cardiovascular

5.2.1 Explain auscultation of the heart including:

a. S_1, S_2, S_3, S_4 heart sounds and their meaning
b. Systolic and diastolic murmurs

5.3. AFFECTIVE OBJECTIVES - Adult Patient Assessment- Cardiovascular

5.3.1 Support the role of EKG interpretations in relationship to critical care transports.

5.4. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment- Cardiovascular

5.4.1 Perform focused history and physical exams for adult patients with cardiovascular disorders.

5.5. COGNITIVE OBJECTIVES - Adult Patient Assessment - Respiratory

5.5.1 Explain the basics of blood gas laboratory analysis including:

a. Normal adult blood gas values
b. Henderson-Hasselbalch equation
c. End tidal CO_2
d. SaO_2 measurement

5.5.2 Differentiate congenital heart disease related hypoxemia from pulmonary related hypoxemia.

5.5.3 Describe correct interpretations of venous and capillary blood gases.

5.6. AFFECTIVE OBJECTIVES - Adult Patient Assessment - Respiratory

5.7. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment - Respiratory

5.7.1 Perform end tidal CO_2 detection.

5.7.2 Perform SaO_2 measurement.

5.7.3 Perform focused physical exams for adult patients with respiratory disorders.

5.7.4 Demonstrate correct interpretations of venous and capillary blood gases for adult patients.

5.8. COGNITIVE OBJECTIVES - Adult Patient Assessment - Gastrointestinal

5.8.1 In relationship to the gastrointestinal system, describe the relevant diagnostic tests, significance and normal values.

5.8.2 Explain the significance of laboratory analysis of the stool for:

- a. Occult blood
- b. Fat, protein, ova and parasites, cultures

5.8.3 Identify factors which cause variations in liver size in the adult patient.

5.9. AFFECTIVE OBJECTIVES - Adult Patient Assessment - Gastrointestinal

5.9.1 Support the significance of all inclusive laboratory analysis of the patient with gastrointestinal disorders.

5.10. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment - Gastrointestinal

5.10.1 Perform focused physical exams for adult patients with gastrointestinal disorders.

5.11. COGNITIVE OBJECTIVES - Adult Patient Assessment - Renal

5.11.1 List the components of the physical exam for a patient with renal disorders.

5.12. AFFECTIVE OBJECTIVES - Adult Patient Assessment - Renal

5.12.1 Support the significance of diagnostic studies relative to critical care transport of patients with renal disorders.

5.13. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment - Renal

5.13.1 Perform focused physical exams for adult patients with renal disorders.

5.14. COGNITIVE OBJECTIVES - Adult Patient Assessment - Endocrine

5.14.1 Explain the function and physiology of the pituitary gland and the anterior pituitary hormones:

- a. GH
- b. ACTH
- c. TSH

5.14.2 Explain the function and physiology of the posterior pituitary hormones:

- a. ADH
- b. Oxytocin

5.14.3 Describe the function and physiology of the thyroid gland.

5.14.4 Describe the pathophysiology and etiology of the following thyroid disorders:

- a. Thyroid enlargement (goiter)
- b. Hyperthyroidism
  - b.1) Thyroid storm (acute)
  - b.2) Chronic
  - b.3) Grave's Disease
- c. Hypothyroidism
  - c.1) Myxedema coma (acute)
  - c.2) Chronic

5.14.5 Explain the function and physiology of the parathyroid glands.

5.14.6 Describe the release of PTH and the effects on serum calcium.
5.14.7 Explain the function and physiology of the adrenal glands and the cortical hormones.
5.14.8 Describe the pathophysiology and etiology of excess glucocorticoids - Cushing's syndrome.
5.14.9 Describe the pathophysiology and etiology of deficient glucocorticoids - Addison's disease.
5.14.10 Describe the pathophysiology and etiology of excess mineralocorticoids - primary aldosteronism.
5.14.11 Describe the pathophysiology and etiology of deficient mineralcorticoids - adrenal crisis (acute) and Addison's disease (chronic).
5.14.12 Explain the function and physiology of the medullary hormones and their role with epinephrine and norepinephrine.
5.14.13 Describe the pathophysiology and etiology of excess medullary hormones (pheochromocytosis) and deficient medullary hormones.
5.14.14 Describe the pathophysiology and etiology of deficient glucagon.
5.14.15 Explain the physiology of somatostatin.
5.14.16 Describe, and relate the significance of and normal values for the following laboratory analyses:
    a. Specific hormone assays
    b. Glucose
    c. Ketoacidosis
5.14.17 List the components of the physical exam for an adult patient with endocrine disorders.
5.14.18 Compare and contrast pediatric versus adult endocrine system physiology.
5.14.19 List the components of the physical exam for a pediatric patient with endocrine disorders.

5.15. AFFECTIVE OBJECTIVES - Adult Patient Assessment - Endocrine

5.15.1 Justify comprehensive laboratory analysis before transport of the patient with endocrine disorders.

5.16. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment - Endocrine

5.16.1 Perform focused physical exams for adult patients with endocrine disorders.

5.17. COGNITIVE OBJECTIVES - Adult Patient Assessment - Neurologic

5.17.1 Explain cerebral perfusion pressure (CPP) and the relationship of CPP to cerebral blood flow and mean arterial pressure.
5.17.2 Describe normal cerebral perfusion values and the causes of both increased or decreased cerebral perfusion pressure.
5.17.3 Describe normal intracranial pressure values and the causes of both increased or decreased intracranial pressure.
5.17.4 Describe the relationship between intracranial volume and intracranial pressure.
5.17.5 List signs and symptoms of increasing intracranial pressure.
5.17.6 Explain brain herniation, symptoms and implications.
5.17.7 Describe interventions to control intracranial pressure.
5.17.8 Explain the rationale for interventions to control intracranial pressure.
5.17.9 Explain patient history components pertinent to the neurologic exam.
5.17.10 Describe the diagnostic studies pertinent to the neurologic exam.

5.17.11 Explain clotting profiles that may affect treatment and outcome, including prothrombin time and partial thromboplastin time.
5.17.12 Describe toxicology that may affect treatment and outcome, including alcohol, therapeutic and illicit drugs.
5.17.13 Explain the following terms and their relationship to the neurologic exam:
- a. Deep tendon reflexes
- b. Stereognosis
- c. Two-point discrimination
- d. Extinction phenomenon
- e. Graphesthesia
- f. Point location
- g. Nystagmus
- h. Corneal reflex
- i. Doll's eyes - 5th cranial nerve (Pons)
- j. Cold caloric test
- k. Gaze preference
- l. Moro reflex

5.17.14 List the causes and types of spinal cord lesions.
5.17.15 Compare and contrast pediatric versus adult neurological system physiology.
5.17.16 List the components of the physical exam for pediatric patients from neonates to adolescents with neurological disorders.
5.17.17 Describe coma evaluation components.
5.17.18 List and explain diagnostic findings which may be mistaken as seizures in the pediatric patient.

5.18. AFFECTIVE OBJECTIVES - Adult Patient Assessment - Neurologic

5.18.1 Support the rationale for comprehensive assessments of the patient with spinal cord lesions.

5.19. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment - Neurologic

5.19.1 Perform focused physical exams for adult patients with neurological disorders.
5.19.2 Perform interventions to control intracranial pressure.

5.20. COGNITIVE OBJECTIVES - Adult Patient Assessment Hematologic & Immunologic

5.20.1 Describe the anatomy, purpose, function and physiology of the hematologic system including:
- a. Bone marrow
- b. Liver
- c. Pluripotent stem cells
- d. Red blood cells
- e. Platelets (thrombocytes)

5.20.2 Explain oxygenation and hemostasis in relationship to the hematologic system.
5.20.3 Explain innate immunity.
5.20.4 Describe the anatomy and physical barriers of innate immunity and the relationship to inflammation and phagocytosis.
5.20.5 Describe tolerance and the relationship to autoimmune disease.
5.20.6 Explain the importance of a complete blood count with differential.

5.20.7 Describe and relate the significance of and normal values for:

a. Mean corpuscular volume
b. Mean corpuscular hemoglobin concentration
c. Mean corpuscular hemoglobin
d. Platelets
e. Reticulocyte count
f. Erythrocyte sedimentation rate
g. Fibrin split products
h. D-dimers
i. Fibrinogen
j. Coomb's antiglobulin test
k. Direct
l. Indirect
m. T cell counts
n. Total T cells
o. T_H cells
p. T_S cells
q. T_H/T_S
r. HIV antibody test
s. Blood tissue typing
t. Blood cultures
u. Sputum cultures

5.21. AFFECTIVE OBJECTIVES - Adult Patient Assessment Hematological & Immunology

5.21.1 Justify comprehensive laboratory analysis before transport of the patient with hematological and immunology disorders.

5.22. PSYCHOMOTOR OBJECTIVES - Adult Patient Assessment Hematological & Immunology

5.22.1 Perform focused physical exams of adult patients with hematological and immunology disorders.

SECTION 6 Patient Management Decision Making

6.1. UNIT TERMINAL OBJECTIVE - Patient Management Decision Making

At the completion of this unit, the student will be able to integrate pathophysiological principles and assessment findings to manage the treatment and transport of the critical care patient with major multi-system trauma, end stage disease presentation, acute presentations of chronic conditions, and single or multi-disease etiologies.

6.2. COGNITIVE OBJECTIVES - Cardiovascular System Disorders

6.2.1 Explain the common treatment modes and complications of treatments for coronary artery disease.
6.2.2 List equipment, personnel and vehicle requirements for the patient with coronary artery disease.
6.2.3 List equipment, personnel and vehicle requirements for the patient with angina pectoris.
6.2.4 Explain the common treatment modes and complications of treatments for myocardial infarction.
6.2.5 List equipment, personnel and vehicle requirements for the patient with myocardial infarction.
6.2.6 Explain the common treatment modes and complications of treatments for heart failure.
6.2.7 List equipment, personnel and vehicle requirements for the patient with heart failure.
6.2.8 Describe the pathophysiology and etiology of pericardial disease.
6.2.9 Explain the common treatment modes and complications of treatments for pericardial disease.
6.2.10 List equipment, personnel and vehicle requirements for the patient with pericardial disease.
6.2.11 Describe the pathophysiology and etiology of myocarditis.
6.2.12 Explain the common treatment modes and complications of treatments for myocarditis.
6.2.13 List equipment, personnel and vehicle requirements for the patient with myocarditis.
6.2.14 Describe the pathophysiology and etiology of infective endocarditis.
6.2.15 Explain the common treatment modes and complications of treatments for infective endocarditis.
6.2.16 List equipment, personnel and vehicle requirements for the patient with infective endocarditis.
6.2.17 Describe the pathophysiology and etiology of cardiomyopathy.
6.2.18 Explain the common treatment modes and complications of treatments for cardiomyopathy.
6.2.19 List equipment, personnel and vehicle requirements for the patient with cardiomyopathy.
6.2.20 Describe the pathophysiology and etiology of end stage heart disease.
6.2.21 Explain the common treatment modes and complications of treatments for end stage heart disease.
6.2.22 List equipment, personnel and vehicle requirements for the patient with end stage heart disease.
6.2.23 Describe the pathophysiology and etiology of cardiac rhythm disorders.
6.2.24 List equipment, personnel and vehicle requirements for the patient with cardiac rhythm disorders.
6.2.25 Describe the pathophysiology and etiology of mitral insufficiency.

6.2.26 Explain the common treatment modes and complications of treatments for mitral insufficiency.
6.2.27 List equipment, personnel and vehicle requirements for the patient with mitral insufficiency.
6.2.28 Describe the pathophysiology and etiology of mitral stenosis.
6.2.29 Explain the common treatment modes and complications of treatments for mitral stenosis.
6.2.30 List equipment, personnel and vehicle requirements for the patient with mitral stenosis. Describe the pathophysiology and etiology of aortic stenosis.
6.2.31 Explain the common treatment modes and complications of treatments for aortic stenosis.
6.2.32 List equipment, personnel and vehicle requirements for the patient with aortic stenosis.
6.2.33 Describe the pathophysiology and etiology of aortic insufficiency.
6.2.34 Explain the common treatment modes and complications of treatments for aortic insufficiency
6.2.35 List equipment, personnel and vehicle requirements for the patient with aortic insufficiency.
6.2.36 Describe the pathophysiology and etiology of atrial septic defect.
6.2.37 Explain the common treatment modes and complications of treatments for atrial septic defect.
6.2.38 List equipment, personnel and vehicle requirements for the patient with atrial septic defect.
6.2.39 Describe the pathophysiology and etiology of ventricular septic defect.
6.2.40 Explain the common treatment modes and complications of treatments for ventricular septic defect.
6.2.41 List equipment, personnel and vehicle requirements for the patient with ventricular septic defect.
6.2.42 Describe the pathophysiology and etiology of patent ductus arteriosus.
6.2.43 Explain the common treatment modes and complications of treatments for patent ductus arteriosus.
6.2.44 List equipment, personnel and vehicle requirements for the patient with patent ductus arteriosus.
6.2.45 Describe the pathophysiology and etiology of coarctation of the aorta.
6.2.46 Explain the common treatment modes and complications of treatments for coarctation of the aorta.
6.2.47 List equipment, personnel and vehicle requirements for the patient with coarctation of the aorta.
6.2.48 Explain the common treatment modes and complications of treatments for hypertensive crisis.
6.2.49 List equipment, personnel and vehicle requirements for the patient with hypertensive crisis.
6.2.50 Describe the pathophysiology and etiology of aortic and peripheral arterial disease.
6.2.51 Explain the common treatment modes and complications of treatments for aortic and peripheral arterial disease.
6.2.52 List equipment, personnel and vehicle requirements for the patient with aortic and peripheral arterial disease.

6.3. AFFECTIVE OBJECTIVES - Cardiovascular System Disorders

6.3.1 Support the rationale for transport of patients with cardiovascular disorders.

6.4. PSYCHOMOTOR OBJECTIVES - Cardiovascular System Disorders

6.4.1 None identified for this unit

6.5. COGNITIVE OBJECTIVES - Respiratory System Disorders

6.5.1 List equipment, personnel and vehicle requirements for patients in acute respiratory failure.

6.5.2 Explain the common treatment modes and complications of treatments for adult respiratory distress syndrome.

6.5.3 List equipment, personnel and vehicle requirements for patients with adult respiratory distress syndrome.

6.5.4 Explain the common treatment modes and complications of treatments for chronic obstructive pulmonary disease.

6.5.5 List equipment, personnel and vehicle requirements for patients with chronic obstructive pulmonary disease.

6.5.6 Explain the common treatment modes and complications of treatments for asthma and status asthmaticus.

6.5.7 List equipment, personnel and vehicle requirements for patients with asthma and status asthmaticus.

6.5.8 Explain the common treatment modes and complications of treatments for pulmonary embolism.

6.5.9 List equipment, personnel and vehicle requirements for patients with pulmonary embolism.

6.5.10 Explain the common treatment modes and complications of treatments for acute pneumonia.

6.5.11 List equipment, personnel and vehicle requirements for patients with acute pneumonia.

6.5.12 Explain the common treatment modes and complications of treatments for pulmonary aspiration.

6.5.13 List equipment, personnel and vehicle requirements for patients with pulmonary aspiration.

6.5.14 Explain the common treatment modes and complications of treatments for acute pulmonary inhalation injuries.

6.5.15 List equipment, personnel and vehicle requirements for patients with acute pulmonary inhalation injuries.

6.5.16 Describe the pathophysiology and etiology of neoplastic lung disease.

6.5.17 Explain the common treatment modes and complications of treatments for neoplastic lung disease.

6.5.18 List equipment, personnel and vehicle requirements for patients with neoplastic lung disease.

6.6. AFFECTIVE OBJECTIVES - Respiratory System Disorders

6.6.1 Support the rationale for transport of patients with common respiratory disorders.

6.7. PSYCHOMOTOR OBJECTIVES - Respiratory System Disorders

6.7.1 None identified for this unit.

6.8. COGNITIVE OBJECTIVES - Gastrointestinal Systems Disorders

6.8.1 Describe the pathophysiology and etiology of acute pancreatitis.

6.8.2 Explain the common treatment modes and complications of treatments for acute pancreatitis.

6.8.3 List equipment, personnel and vehicle requirements for the patient with acute pancreatitis.
6.8.4 Explain the common treatment modes and complications of treatments for GI bleeding.
6.8.5 List equipment, personnel and vehicle requirements for the patient with GI bleeding.
6.8.6 Explain the common treatment modes and complications of treatments for hepatitis.
6.8.7 List equipment, personnel and vehicle requirements for the patient with hepatitis.
6.8.8 Describe the pathophysiology and etiology of acute (fulminant) liver failure.
6.8.9 Explain the common treatment modes and complications of treatments for acute (fulminant) liver failure.
6.8.10 List equipment, personnel and vehicle requirements for the patient with acute (fulminant) liver failure.
6.8.11 Describe the pathophysiology and etiology of chronic liver failure (decompensated cirrhosis).
6.8.12 Explain the common treatment modes and complications of treatments for chronic liver failure (decompensated cirrhosis).
6.8.13 List equipment, personnel and vehicle requirements for the patient with chronic liver failure (decompensated cirrhosis).
6.8.14 Explain the common treatment modes and complications of treatments for acute abdomen.
6.8.15 List equipment, personnel and vehicle requirements for the patient with acute abdomen.
6.8.16 Explain the common treatment modes and complications of treatments for abdominal trauma.
6.8.17 List equipment, personnel and vehicle requirements for the patient with abdominal trauma.
6.8.18 Describe the pathophysiology and etiology of inflammatory bowel disease.
6.8.19 Explain the common treatment modes and complications of treatments for inflammatory bowel disease.
6.8.20 List equipment, personnel and vehicle requirements for the patient with inflammatory bowel disease.

6.9. AFFECTIVE OBJECTIVES - Gastrointestinal Systems Disorders

6.9.1 Support the rationale for transport of the patient with gastrointestinal disorders.

6.10. PSYCHOMOTOR OBJECTIVES - Gastrointestinal Systems Disorders

6.10.1 None identified for this unit.

6.11. COGNITIVE OBJECTIVES - Renal System Disorders

6.11.1 Explain the common treatment modes and complications of treatments for acute renal failure.
6.11.2 List equipment, personnel and vehicle requirements for the patient with acute renal failure.
6.11.3 Explain the common treatment modes and complications of treatments for chronic renal failure.
6.11.4 List equipment, personnel and vehicle requirements for the patient with chronic renal failure.
6.11.5 Describe the pathophysiology and etiology of hyperkalemia.
6.11.6 Explain the common treatment modes and complications of treatments for hyperkalemia.
6.11.7 List equipment, personnel and vehicle requirements for the patient with hyperkalemia.
6.11.8 Describe the pathophysiology and etiology of hypokalemia.

6.11.9 Explain the common treatment modes and complications of treatments for hypokalemia.
6.11.10 List equipment, personnel and vehicle requirements for the patient with hypokalemia.
6.11.11 Describe the pathophysiology and etiology of hypernatremia.
6.11.12 Explain the common treatment modes and complications of hypernatremia.
6.11.13 List equipment, personnel and vehicle requirements for the patient with hypernatremia.
6.11.14 Describe the pathophysiology and etiology of hyponatremia.
6.11.15 Explain the common treatment modes and complications of treatments for hyponatremia.
6.11.16 List equipment, personnel and vehicle requirements for the patient with hyponatremia.
6.11.17 Describe the pathophysiology and etiology of hypocalcemia.
6.11.18 Explain the common treatment modes and complications of treatments for hypocalcemia.
6.11.19 List equipment, personnel and vehicle requirements for the patient with hypocalcemia.
6.11.20 Describe the pathophysiology and etiology of hypercalcemia.
6.11.21 Explain the common treatment modes and complications of treatments for hypercalcemia.
6.11.22 List equipment, personnel and vehicle requirements for the patient with hypercalcemia.
6.11.23 Describe the pathophysiology and etiology of hypophosphatemia.
6.11.24 Explain the common treatment modes and complications of treatments for hypophosphatemia.
6.11.25 List equipment, personnel and vehicle requirements for the patient with hypophosphatemia.
6.11.26 Describe the pathophysiology and etiology of hypermagnesemia.
6.11.27 Explain the common treatment modes and complications of treatments for hypermagnesemia.
6.11.28 List equipment, personnel and vehicle requirements for the patient with hypermagnesemia.
6.11.29 Describe the pathophysiology and etiology of hypomagnesemia.
6.11.30 Explain the common treatment modes and complications of treatments for hypomagnesemia.
6.11.31 List equipment, personnel and vehicle requirements for the patient with hypomagnesemia.
6.11.32 Describe the pathophysiology and etiology of renal trauma.
6.11.33 Explain the common treatment modes and complications of treatments for renal trauma.
6.11.34 List equipment, personnel and vehicle requirements for the patient with renal trauma.

6.12. AFFECTIVE OBJECTIVES - Renal System Disorders

6.12.1 Support the rationale for transport of adult and pediatric patients with renal disorders.

6.13. PSYCHOMOTOR OBJECTIVES - Renal System Disorders

6.13.1 None identified for this unit.

6.14. COGNITIVE OBJECTIVES – Endocrine System Disorders

6.14.1 Describe the pathophysiology and etiology of diabetes insipidus.
6.14.2 Explain the common treatment modes and complications of treatments for diabetes insipidus.
6.14.3 List equipment, personnel and vehicle requirements for the patient with diabetes insipidus.
6.14.4 Describe the pathophysiology and etiology of aberrant ADH secretion.
6.14.5 Explain the common treatment modes and complications of treatments for aberrant ADH secretion.

6.14.6 List equipment, personnel and vehicle requirements for the patient with aberrant ADH secretion.
6.14.7 Describe the pathophysiology and etiology of thyrotoxicosis.
6.14.8 Explain the common treatment modes and complications of treatments for thyrotoxicosis.
6.14.9 List equipment, personnel and vehicle requirements for the patient with thyrotoxicosis.
6.14.10 Describe the pathophysiology and etiology of myxedema coma.
6.14.11 Explain the common treatment modes and complications of treatments for myxedema coma.
6.14.12 List equipment, personnel and vehicle requirements for the patient with myxedema coma.
6.14.13 Describe the pathophysiology and etiology of hypoparathyroidism.
6.14.14 Explain the common treatment modes and complications of treatments for hypoparathyroidism.
6.14.15 List equipment, personnel and vehicle requirements for the patient with hypoparathyroidism.
6.14.16 Describe the pathophysiology and etiology of hyperparathyroidism.
6.14.17 Explain the common treatment modes and complications of treatments for hyperparathyroidism.
6.14.18 List equipment, personnel and vehicle requirements for the patient with hyperparathyroidism.
6.14.19 Explain the common treatment modes and complications of treatments for diabetic ketoacidosis (DKA).
6.14.20 List equipment, personnel and vehicle requirements for the patient with diabetic ketoacidosis (DKA).
6.14.21 Describe the pathophysiology and etiology of hyperglycemic, hyperosmolar nonketonic coma.
6.14.22 Explain the common treatment modes and complications of treatments for hyperglycemic, hyperosmolar nonketonic coma.
6.14.23 List equipment, personnel and vehicle requirements for the patient with hyperglycemic, hyperosmolar nonketonic coma.
6.14.24 Describe the pathophysiology and etiology of hyperglycemic, non-acidotic diabetic coma.
6.14.25 Explain the common treatment modes and complications of treatments for hyperglycemic, non-acidotic diabetic coma.
6.14.26 List equipment, personnel and vehicle requirements for the patient with hyperglycemic, non-acidotic diabetic coma.
6.14.27 Describe the pathophysiology and etiology of hypoglycemia.
6.14.28 Explain the common treatment modes and complications of treatments for hypoglycemia.
6.14.29 List equipment, personnel and vehicle requirements for the patient with hypoglycemia.

6.15. AFFECTIVE OBJECTIVES - Endocrine System Disorders

6.15.1 Support the rationale for transport of patients with endocrine disorders.

6.16. PSYCHOMOTOR OBJECTIVES - Endocrine System Disorders

6.16.1 None identified for this unit.

6.17. COGNITIVE OBJECTIVES - Neurologic System Disorders

6.17.1 List equipment, personnel and vehicle requirements for the patient with head trauma.
6.17.2 Describe the pathophysiology and etiology of intracerebral bleeding.
6.17.3 Explain the common treatment modes and complications of treatments for intracerebral bleeding.
6.17.4 List equipment, personnel and vehicle requirements for the patient with intracerebral bleeding.
6.17.5 Describe the pathophysiology and etiology of subarachnoid hemorrhage.
6.17.6 Explain the common treatment modes and complications of treatments for subarachnoid hemorrhage
6.17.7 List equipment, personnel and vehicle requirements for the patient with subarachnoid hemorrhage.
6.17.8 Describe the pathophysiology and etiology of epidural hematoma.
6.17.9 Explain the common treatment modes and complications of treatments for epidural hematoma.
6.17.10 List equipment, personnel and vehicle requirements for the patient with epidural hematoma.
6.17.11 Describe the pathophysiology and etiology of subdural hematoma.
6.17.12 Explain the common treatment modes and complications of treatments for subdural hematoma.
6.17.13 List equipment, personnel and vehicle requirements for the patient with subdural hematoma.
6.17.14 Describe the pathophysiology and etiology of hydrocephalus.
6.17.15 Explain the common treatment modes and complications of treatments for hydrocephalus.
6.17.16 List equipment, personnel and vehicle requirements for the patient with hydrocephalus.
6.17.17 Describe the pathophysiology and etiology of brain tumors.
6.17.18 Explain the common treatment modes and complications of treatments for brain tumors.
6.17.19 List equipment, personnel and vehicle requirements for the patient with brain tumors.
6.17.20 Describe the pathophysiology and etiology of intracranial aneurysms.
6.17.21 Explain the common treatment modes and complications of treatments for intracranial aneurysms.
6.17.22 List equipment, personnel and vehicle requirements for the patient with intracranial aneurysms.
6.17.23 Describe the pathophysiology and etiology of arteriovenous malformations.
6.17.24 Explain the common treatment modes and complications of treatments for arteriovenous malformations.
6.17.25 List equipment, personnel and vehicle requirements for the patient with arteriovenous malformations.
6.17.26 Describe the pathophysiology and etiology of stroke.
6.17.27 Explain the common treatment modes and complications of treatments for stroke.
6.17.28 List equipment, personnel and vehicle requirements for the patient with stroke.
6.17.29 Describe the pathophysiology and etiology of acute complete and partial spinal cord injury.
6.17.30 Explain the common treatment modes and complications of treatments for acute complete and partial spinal cord injury .
6.17.31 List equipment, personnel and vehicle requirements for the patient with acute complete and partial spinal cord injury.
6.17.32 Describe the pathophysiology and etiology of status epilepticus.

6.17.33 Explain the common treatment modes and complications of treatments for status epilepticus.
6.17.34 List equipment, personnel and vehicle requirements for the patient with status epilepticus.
6.17.35 Describe the pathophysiology and etiology of Guillain-Barré syndrome.
6.17.36 Explain the common treatment modes and complications of treatments for Guillain-Barré syndrome.
6.17.37 List equipment, personnel and vehicle requirements for the patient with Guillain-Barré syndrome.
6.17.38 Describe the pathophysiology and etiology of Landry-Guillain-Barré syndrome.
6.17.39 Explain the common treatment modes and complications of treatments for Landry-Guillain-Barré syndrome.
6.17.40 List equipment, personnel and vehicle requirements for the patient with Landry-Guillain-Barré syndrome.

6.18. AFFECTIVE OBJECTIVES - Neurologic System Disorders

6.18.1 Support the rationale for transport of patients with neurological disorders.

6.19. PSYCHOMOTOR OBJECTIVES - Neurologic System Disorders

6.19.1 None identified for this unit.

6.20. COGNITIVE OBJECTIVES - Hematologic and Immunologic System Disorders

6.20.1 Describe the pathophysiology and etiology of anemia.
6.20.2 Explain the common treatment modes and complications of treatments for anemia.
6.20.3 List equipment, personnel and vehicle requirements for the patient with anemia.
6.20.4 Describe the pathophysiology and etiology of disseminated intravascular coagulation.
6.20.5 Explain the common treatment modes and complications of treatments for disseminated intravascular coagulation.
6.20.6 List equipment, personnel and vehicle requirements for the patient with disseminated intravascular coagulation.
6.20.7 Describe the pathophysiology and etiology of thrombocytopenia.
6.20.8 Explain the common treatment modes and complications of treatments for thrombocytopenia.
6.20.9 List equipment, personnel and vehicle requirements for the patient with thrombocytopenia.
6.20.10 Describe the pathophysiology and etiology of hypercoagulate disorders.
6.20.11 Explain the common treatment modes and complications of treatments for hypercoagulate disorders.
6.20.12 List equipment, personnel and vehicle requirements for the patient with hypercoagulate disorders.
6.20.13 Describe the pathophysiology and etiology of patients at risk for hemorrhage.
6.20.14 Explain the common treatment modes and complications of treatments of patients at risk for hemorrhage
6.20.15 List equipment, personnel and vehicle requirements for patients at risk for hemorrhage
6.20.16 Describe the pathophysiology and etiology of neutropenia.
6.20.17 Explain the common treatment modes and complications of treatments for neutropenia.
6.20.18 List equipment, personnel and vehicle requirements for the patient with neutropenia.
6.20.19 Describe the pathophysiology and etiology of acute leukemia.

6.20.20 Explain the common treatment modes and complications of treatments for acute leukemia.
6.20.21 List equipment, personnel and vehicle requirements for the patient with acute leukemia.
6.20.22 Describe the pathophysiology and etiology of bone marrow transplantation and peripheral bone stem cell transplantation.
6.20.23 Explain the common treatment modes and complications of treatments for bone marrow transplantation and peripheral bone stem cell transplantation.
6.20.24 List equipment, personnel and vehicle requirements for the patient with bone marrow transplantation and peripheral bone stem cell transplantation.
6.20.25 Describe the pathophysiology and etiology of transplant rejection.
6.20.26 Explain the common treatment modes and complications of treatments for transplant rejection.
6.20.27 List equipment, personnel and vehicle requirements for the patient with transplant rejection.
6.20.28 Describe the pathophysiology and etiology of immunosuppression.
6.20.29 Explain the common treatment modes and complications of treatments for immunosuppression.
6.20.30 List equipment, personnel and vehicle requirements for the patient with immunosuppression.
6.20.31 Describe the pathophysiology and etiology of HIV infection.
6.20.32 Explain the common treatment modes and complications of treatments for HIV infection.
6.20.33 List equipment, personnel and vehicle requirements for the patient with HIV infection.
6.20.34 Describe the pathophysiology and etiology of anaphylactic type I hypersensitivity reactions.
6.20.35 Explain the common treatment modes and complications of treatments for anaphylactic type I hypersensitivity reactions.
6.20.36 List equipment, personnel and vehicle requirements for the patient with anaphylactic type I hypersensitivity reactions.

6.21. AFFECTIVE OBJECTIVES - Hematologic and Immunologic System Disorders

6.21.1 Support the rationale for transport of patients with hematological and immunological disorders.

6.22. PSYCHOMOTOR OBJECTIVES - Hematologic and Immunologic System Disorders

6.22.1 Demonstrate appropriate use of designated equipment before, during and after the transfer of a patient with neutropenia.
6.22.2 Perform blood pressure monitoring with a cuff for a patient at risk for hemorrhage.
6.22.3 Demonstrate how to use designated equipment before, during and after the transfer of a patient at risk for hemorrhage.

6.23. COGNITIVE OBJECTIVES - Infectious Diseases

6.23.1 Compare and contrast the definition of infectious versus communicable diseases.
6.23.2 Describe examples of living and inanimate sources of infectious agents.
6.23.3 Describe the physiology of the immune response.
6.23.4 Describe and provide examples of bacteria and their role in disease causation and transmission.

6.23.5 Describe and provide examples of viruses and their role in disease causation and transmission.
6.23.6 Describe and provide examples of fungi and their role in disease causation and transmission.
6.23.7 Describe and provide examples of protozoa and their role in disease causation and transmission.
6.23.8 Describe and provide examples of organisms similar to bacteria and viruses such as chlamydia, rickettsiae and mycoplasma and their role in disease causation and transmission.
6.23.9 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for viral meningitis.
6.23.10 List the pre- and post-exposure preventative measures and patient transportation precautions for the patient with viral meningitis.
6.23.11 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for bacterial meningitis.
6.23.12 List the pre- and post-exposure preventative measures and patient transportation precautions for the patient with bacterial meningitis.
6.23.13 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for fungal meningitis.
6.23.14 List the pre- and post-exposure preventative measures and patient transportation precautions for the patient with fungal meningitis.
6.23.15 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for multiple antibiotic resistant bacteria.
6.23.16 List the pre- and post-exposure preventative measures and patient transportation precautions for the patient with multiple antibiotic resistant bacteria.
6.23.17 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for methicillin-resistant staphylococcus aureus (MRSA).
6.23.18 List the pre- and post-exposure preventative measuress and patient transportation precautions for the patient with methicillin-resistant staphylococcus aureus (MRSA).
6.23.19 Explain the pathophysiology, signs and symptoms, causative agent and mode of transmission for vancomycin resistant enterococci (VRE) and staphylococcus aureus.
6.23.20 List the pre- and post-exposure preventative measures and patient transportation precautions for the patient with vancomycin resistant enterococci (VRE) and staphylococcus aureus.

6.24. AFFECTIVE OBJECTIVES - Infectious Diseases

6.24.1 Support the rationale for standard precautions for infectious and communicable diseases.

6.25. PSYCHOMOTOR OBJECTIVES - Infectious Diseases

6.25.1 None for this section

6.26. COGNITIVE OBJECTIVES - Burns

6.26.1 Describe fluid resuscitation requirements for circulation management.
6.26.2 Describe the mechanisms to measure adequate fluid resuscitation including hemodynamic parameters and urinary output.
6.26.3 List potential complications with fluid resuscitation and conditions where patients may require more fluids or be volume sensitive.
6.26.4 Explain principles of burn wound management in preparation of transport.

6.26.5 Describe methods of distal circulation monitoring and interventions.
6.26.6 List gastrointestinal issues pertinent to burn management and the need for NG tubes.
6.26.7 Identify medications appropriate for pain management and routes of administration.
6.26.8 Describe and relate the significance of the following diagnostic studies to burn wound management:
- a. Hematocrit
- b. Electrolytes
- c. BUN
- d. Urinalysis
- e. Chest x-ray
- f. ABG's
- g. EKG
- h. Carboxyhemoglobin
- i. Glucose

6.26.9 Explain the psychological issues of self-destruction, guilt, fear, anger and depression with the burn patient and the patient's family members, and potential interventions.
6.26.10 Explain the American Burn Association guidelines for patient transports to burn centers.

6.27. AFFECTIVE OBJECTIVES - Burns

6.27.1 Support the rationale for critical care transport of adult burn patients.

6.28. PSYCHOMOTOR OBJECTIVES - Burns

6.28.1 Perform calculations and monitoring of fluids for circulation management in adult and pediatric burn patients.
6.28.2 Demonstrate airway management techniques for adult and pediatric burn patients.
6.28.3 Demonstrate NG and OG tube placement in adult and pediatric patients.

6.29. COGNITIVE OBJECTIVES - Shock

6.29.1 List equipment, personnel and vehicle requirements for the patient with distributive shock.
6.29.2 Explain the common treatment modes and complications of treatments for cardiogenic shock.
6.29.3 List equipment, personnel and vehicle requirements for the patient with cardiogenic shock.
6.29.4 Explain the common treatment modes and complications of treatments for hypovolemic shock.
6.29.5 List equipment, personnel and vehicle requirements for the patient with hypovolemic shock.
6.29.6 Explain the common treatment modes and complications of treatments for obstructive shock.
6.29.7 List equipment, personnel and vehicle requirements for the patient with obstructive shock.

6.30. AFFECTIVE OBJECTIVES - Shock

6.30.1 Support the rationale for standard precautions with distributive, cardiogenic, respiratory, hypovolemic and obstructive shock.

6.31. PSYCHOMOTOR OBJECTIVES - Shock

6.31.1 None identified for this unit.

6.32. COGNITIVE OBJECTIVES - Dialysis

6.32.1 Compare and contrast hemodialysis and peritoneal dialysis.
6.32.2 Describe external cannula or shunt methods of vascular access.
6.32.3 Explain the indications for use and the advantages and disadvantages of external cannula or shunt methods of vascular access.
6.32.4 Explain external cannula or shunt assessments that occur prior to patient transport.
6.32.5 Describe external cannula or shunt management during patient transports.
6.32.6 Identify potential complications of external cannula or shunt, appropriate interventions and necessary equipment.
6.32.7 Describe the types of catheters used, the sites for insertion and the advantages and disadvantages of temporary vascular access for patients on hemodialysis.
6.32.8 List the indications for temporary vascular access.
6.32.9 Explain temporary vascular access assessments that occur prior to patient transport.
6.32.10 Describe temporary vascular access management during patient transports.
6.32.11 Identify potential complications of temporary vascular access, appropriate interventions and necessary equipment.
6.32.12 Describe the types of catheters used, the sites for insertion and the advantages and disadvantages of catheters for patients on peritoneal dialysis.
6.32.13 Explain assessments that occur prior to patient transport for those on peritoneal dialysis.
6.32.14 Describe patient management during transports of those on peritoneal dialysis.
6.32.15 Identify potential complications for those on peritoneal dialysis, appropriate interventions and necessary equipment.

6.33. AFFECTIVE OBJECTIVES - Dialysis

6.33.1 Support the rationale for critical care transports for patients on hemodialysis and peritoneal dialysis.

6.34. PSYCHOMOTOR OBJECTIVES - Dialysis

6.34.1 Demonstrate external cannula or shunt assessments that occur prior to patient transport.
6.34.2 Demonstrate temporary vascular access assessments that occur prior to patient transport.
6.34.3 Demonstrate assessments that occur prior to patient transport for those on peritoneal dialysis.

SECTION 7 Pediatric Patient Assessments

7.1. UNIT TERMINAL OBJECTIVE - Pediatric Patient Assessment

At the completion of this unit the student will be able to effectively complete a complete history and physical exam and focused history and physical exams on the pediatric patient

7.2. COGNITIVE OBJECTIVES - Pediatric Patient Assessment

7.2.1 Describe pediatric compensatory mechanisms.
7.2.2 Explain the steps of a physical exam of a pediatric cardiac patient.
7.2.3 Compare and contrast pediatric versus adult cardiovascular physiology.
7.2.4 Explain the steps involved in an exam of a pediatric patient with respiratory disorders.
7.2.5 Describe neonatal to adolescent pediatric compensatory mechanisms.
7.2.6 Compare and contrast pediatric versus adult hematologic and immunologic system physiology.
7.2.7 List the components of physical exams for pediatric patients from neonates to adolescents with hematologic and immunologic system disorders.
7.2.8 Describe immune system maturation and issues related to management of acute disorders.
7.2.9 Explain potential blood administration issues with the pediatric patient.
7.2.10 Describe blood substitutes effects on coagulation in pediatric patients.
7.2.11 Identify factors which cause variations in liver size in the pediatric patient
7.2.12 Explain the steps involved in an exam of a pediatric patient with gastrointestinal disorders.
7.2.13 Compare and contrast pediatric versus adult gastrointestinal system physiology

SECTION 8 Pediatric Patient Management and Transport

8.1. UNIT TERMINAL OBJECTIVE - Pediatric Patient Management and Transport

At the completion of this unit, the student will be able to integrate pathophysiological principles and assessment findings to manage the treatment and transport of the critical care patient with major multi-system trauma, end stage disease presentation, acute presentations of chronic conditions, and single or multi-disease etiologies.

8.2. COGNITIVE OBJECTIVES - Pediatric Patient Management and Transport

8.2.1 Explain the need for specialty care teams and equipment for the transport of critically ill or injured pediatric patients.

8.2.2 Describe the conditions which do or do not warrant specialty care transport teams for pediatric patients.

8.2.3 Define the basic principles of assessing the pediatric patient.

8.2.4 Describe age-related anatomical and physiological issues with pediatric patients.

8.2.5 List medical and traumatic conditions for which the pediatric age group is at risk.

8.2.6 Identify common medical and traumatic conditions requiring transport of a pediatric patient to a tertiary medical care facility.

8.2.7 Describe pediatric patient techniques for:

a. Airway management
b. Breathing management
c. Circulation management

8.2.8 Describe methods for securing pediatric patients to allow for interventions and assessment during transport.

8.2.9 Describe special interactions/communications for the patient and family of the dying child.

8.2.10 Describe the techniques for administering PO, rectal, IM, SQ, and IV, medications to the pediatric patient.

8.2.11 List the contraindicated antibiotics to the pediatric patient.

8.2.12 Describe neonatal to adolescent pediatric compensatory mechanisms.

8.2.13 Describe the pathophysiology and etiology of hypothermia.

8.2.14 Explain the common treatment modes and complications of treatments for hypothermia.

8.2.15 List equipment, personnel and vehicle requirements for the pediatric patient with hypothermia.

8.2.16 Describe the pathophysiology and etiology of near drowning in the pediatric patient.

8.2.17 Explain the common treatment modes and complications of treatments for near drowning in the pediatric patient.

8.2.18 List equipment, personnel and vehicle requirements for the pediatric patient involved in a near drowning incident.

8.2.19 Describe the pathophysiology and etiology of Reye's Syndrome.

8.2.20 Explain the common treatment modes and complications of treatments for Reye's Syndrome.

8.2.21 List equipment, personnel and vehicle requirements for the pediatric patient with Reye's Syndrome.

8.2.22 Describe the pathophysiology and etiology of child abuse.

8.2.23 Explain the common treatment modes and complications of treatments for child abuse.

8.2.24 List equipment, personnel and vehicle requirements for the pediatric patient who has been abused
8.2.25 Describe the pathophysiology and etiology of poisoning.
8.2.26 Explain the common treatment modes and complications of treatments for poisoning.
8.2.27 List equipment, personnel and vehicle requirements for the poisoned pediatric patient.
8.2.28 Describe the pathophysiology and etiology of multiple trauma.
8.2.29 Explain the common treatment modes and complications of treatments for multiple trauma.
8.2.30 List equipment, personnel and vehicle requirements for the pediatric patient with multiple trauma. Describe the pathophysiology and etiology of pediatric acute abdomen.
8.2.31 Explain the common treatment modes and complications of treatments for pediatric acute abdomen.
8.2.32 List equipment, personnel and vehicle requirements for the pediatric patient with acute abdomen.
8.2.33 Describe the pathophysiology and etiology of pediatric hyperbilirubinemia.
8.2.34 Explain the common treatment modes and complications of treatments for pediatric hyperbilirubinemia.
8.2.35 List equipment, personnel and vehicle requirements for the pediatric patient with hyperbilirubinemia.
8.2.36 Describe the pathophysiology and etiology of pediatric GI bleeding.
8.2.37 Explain the common treatment modes and complications of treatments for pediatric GI bleeding.
8.2.38 List equipment, personnel and vehicle requirements for the pediatric patient with GI bleeding.
8.2.39 Describe the pathophysiology and etiology of pediatric acute gastroenteritis.
8.2.40 Explain the common treatment modes and complications of treatments for pediatric acute gastroenteritis.
8.2.41 List equipment, personnel and vehicle requirements for the pediatric patient with acute gastroenteritis.
8.2.42 Describe the pathophysiology and etiology of pediatric pyloric stenosis.
8.2.43 Explain the common treatment modes and complications of treatments for pediatric pyloric stenosis.
8.2.44 List equipment, personnel and vehicle requirements for the pediatric patient with pyloric stenosis.
8.2.45 Describe the pathophysiology and etiology of meningitis.
8.2.46 Explain the common treatment modes and complications of treatments for meningitis.
8.2.47 List equipment, personnel and vehicle requirements for the pediatric patient with meningitis.
8.2.48 Describe the pathophysiology and etiology of pediatric thermoregulation issues.
8.2.49 Explain the common treatment modes and complications of treatments for pediatric thermoregulation issues.
8.2.50 List equipment, personnel and vehicle requirements for the pediatric patient with thermoregulation issues.

8.3. Pediatric Metabolic Disorders

8.3.1 Compare and contrast pediatric versus adult renal system physiology including fluid and electrolyte differences.
8.3.2 Describe pediatric renal maturation and treatment implications.

8.3.3 Explain the placement for and technique for inserting urinary catheters in pediatric patients and potential complications.
8.3.4 Describe methods for troubleshooting catheter problems in pediatric patients.
8.3.5
8.3.6 Describe the pathophysiology and etiology of pediatric insulin dependent diabetes mellitus.
8.3.7 Explain the common treatment modes and complications of treatments for pediatric insulin dependent diabetes mellitus.
8.3.8 List equipment, personnel and vehicle requirements for the pediatric patient with insulin dependent diabetes mellitus.
8.3.9 Describe the pathophysiology and etiology of pediatric diabetic ketoacidosis.
8.3.10 Explain the common treatment modes and complications of treatments for pediatric diabetic ketoacidosis.
8.3.11 List equipment, personnel and vehicle requirements for the pediatric patient with diabetic ketoacidosis.
8.3.12 Describe the pathophysiology and etiology of pediatric hypoglycemia.
8.3.13 Explain the common treatment modes and complications of treatments for pediatric hypoglycemia.
8.3.14 List equipment, personnel and vehicle requirements for the pediatric patient with hypoglycemia.
8.3.15 Describe the pathophysiology and etiology of pediatric congenital adrenal hyperplasia.
8.3.16 Explain the common treatment modes and complications of treatments for pediatric congenital adrenal hyperplasia.
8.3.17 List equipment, personnel and vehicle requirements for the pediatric patient with congenital adrenal hyperplasia. Describe the pathophysiology and etiology of pediatric acute renal failure.
8.3.18 Explain the common treatment modes and complications of treatments for pediatric acute renal failure.
8.3.19 List equipment, personnel and vehicle requirements for the pediatric patient with acute renal failure.
8.3.20 Describe the pathophysiology and etiology of urgent pediatric sexual abuse conditions.
8.3.21 Explain the common treatment modes and complications of treatments for urgent pediatric sexual abuse conditions.
8.3.22 List equipment, personnel and vehicle requirements for the pediatric patient with urgent pediatric sexual abuse conditions.
8.3.23 Describe the pathophysiology and etiology of malfunctioning VP shunt.
8.3.24 Explain the common treatment modes and complications of treatments for malfunctioning VP shunt.
8.3.25 List equipment, personnel and vehicle requirements for the pediatric patient with malfunctioning VP shunt.
8.3.26 Describe the pathophysiology and etiology of seizures.
8.3.27 Explain the common treatment modes and complications of treatments for seizures.
8.3.28 List equipment, personnel and vehicle requirements for the pediatric patient with seizures
8.3.29 List equipment, personnel and vehicle requirements for the pediatric patient with febrile seizures

8.4 Pediatric Cardiovascular Disorders

8.4.1 Describe the pathophysiology and etiology of pediatric cardiac arrest.

8.4.2 Explain the common treatment modes and complications of treatments for pediatric cardiac arrest.
8.4.3 List equipment, personnel and vehicle requirements for the pediatric patient with cardiac arrest.
8.4.4 Describe the pathophysiology and etiology of complex congenital heart disease including cyanotic, acyanotic, obstructive and mixed.
8.4.5 Explain the common treatment modes (prostaglandin E (PGE) use, special ventilator and electrolyte considerations) and complications of treatments for complex congenital heart disease.
8.4.6 List equipment, personnel and vehicle requirements for the pediatric patient with complex congenital heart disease.
8.4.7 Describe the pathophysiology and etiology of pediatric cardiomyopathies and heart failure.
8.4.8 Explain the common treatment modes and complications of treatments for pediatric cardiomyopathies and heart failure.
8.4.9 List equipment, personnel and vehicle requirements for the pediatric patient with cardiomyopathies and heart failure.
8.4.10 Describe the pathophysiology and etiology of pediatric rhythm disturbances.
8.4.11 Explain the common treatment modes and complications of treatments for pediatric rhythm disturbances.
8.4.12 List equipment, personnel and vehicle requirements for the pediatric patient with rhythm disturbances.
8.4.13 Describe the pathophysiology and etiology of pediatric hypertension.
8.4.14 Explain the common treatment modes and complications of treatments for pediatric hypertension.
8.4.15 List equipment, personnel and vehicle requirements for the pediatric patient with hypertension.
8.4.16 Describe the pathophysiology and etiology of sudden infant death syndrome.
8.4.17 Explain the common treatment modes and complications of treatments for sudden infant death syndrome.
8.4.18 List equipment, personnel and vehicle requirements for the pediatric patient with sudden infant death syndrome.

8.5. Pediatric Respiratory Disorders

8.5.1 Describe the pathophysiology and etiology of pediatric respiratory distress/failure due to pneumonia.
8.5.2 Explain the common treatment modes and complications of treatments for pediatric respiratory distress/failure due to pneumonia.
8.5.3 List equipment, personnel and vehicle requirements for the pediatric patient with respiratory distress/failure due to pneumonia.
8.5.4 Describe the pathophysiology and etiology of pediatric upper airway obstructions including croup, supraglotitis, pharyngeal abscess, tracheomalacia and bronchomalacia.
8.5.5 Explain the common treatment modes and complications of treatments for pediatric upper airway obstructions including croup, supraglotitis, pharyngeal abscess, tracheomalacia and bronchomalacia.
8.5.6 List equipment, personnel and vehicle requirements for the pediatric patient with upper airway obstructions including croup, supraglotitis, pharyngeal abscess, tracheomalacia and bronchomalacia.
8.5.7 Describe the pathophysiology and etiology of pediatric epiglottitis.

8.5.8 List equipment, personnel and vehicle requirements for the pediatric patient with epiglottitis.

8.5.9 Describe the pathophysiology and etiology of pediatric small airway disease including bronchiolitis and asthma.

8.5.10 Explain the common treatment modes and complications of treatments for pediatric small airway disease including bronchiolitis and asthma.

8.5.11 List equipment, personnel and vehicle requirements for the pediatric patient with small airway disease including bronchiolitis and asthma.

8.6. Pediatric Disorders Infectious Diseases

8.6.1 Describe the pathophysiology and etiology of pediatric sepsis/bacteremia, purpura fulminans, Henoch-Schönlein purpura (HSP).

8.6.2 Explain the common treatment modes and complications of treatments for pediatric sepsis/bacteremia, purpura fulminans, Henoch-Schönlein purpura (HSP).

8.6.3 List equipment, personnel and vehicle requirements for the pediatric patient with sepsis/bacteremia, purpura fulminans, Henoch-Schönlein purpura (HSP).

8.6.4 Describe the pathophysiology and etiology of pediatric neutropenia, anemia and thrombocytopenia.

8.6.5 Explain the common treatment modes and complications of treatments for pediatric neutropenia, anemia and thrombocytopenia.

8.6.6 List equipment, personnel and vehicle requirements for the pediatric patient with neutropenia, anemia and thrombocytopenia.

8.7. Burns (Pediatric Burn Injuries)

8.7.1 Explain the significance of weight to body surface area in the pediatric burn patient.

8.7.2 Explain the significance of muscle mass and body surface area to temperature regulation in the pediatric burn patient.

8.7.3 Compare and contrast temperature sensitivity in adult and pediatric burn patients.

8.7.4 Explain the physiologic differences in airway management for pediatric versus adult burn patients.

8.7.5 Describe indications for NG and/or OG tubes with pediatric burn patients.

8.7.6 Explain the methods for calculating fluid needs in children.

8.7.7 List potential child abuse indicators with pediatric burn patients.

8.8. AFFECTIVE OBJECTIVES - Pediatric Patient Management and Transport

8.8.1 Justify the necessity for special detail to the transport of the critically injured or ill pediatric patient by conventional adult transport teams.

8.8.2 Support the need for special interaction/communication for the patient and family of the dying child.

8.9. PSYCHOMOTOR OBJECTIVES - Pediatric Patient Management and Transport

8.9.1 Demonstrate pediatric age related techniques in:

a. Airway management
b. Breathing management
c. Circulation management

8.9.2 Demonstrate securing a pediatric patient allowing for interventions and assessment during transport.

8.9.3 Demonstrate techniques for administering PO, rectal, IM, SQ, and IV, medications to the pediatric patient.

8.9.4 Demonstrate ability to differentiate cardiac disease from sepsis and respiratory failure in the pediatric patient.

SECTION 9 Pharmacology

9.1. UNIT TERMINAL OBJECTIVE - Pharmacology

At the completion of this unit, the student will be able to determine the appropriate use of pharmacological interventions as part of the overall patient management plan and demonstrate knowledge of specific medications common to patients requiring critical care transports.

9.2. COGNITIVE OBJECTIVES - Pharmacology

9.2.1 Describe how to evaluate the actions, pharmacokinetics, indications, contraindications, route of administration, adverse effects, drug incompatibilities/interactions of all medications for safe administration.

9.2.2 Explain the time response curve and dose response curve of drug use.

9.2.3 Identify the effects of drug use on the liver, on renal dysfunction, in shock, and on age extremes.

9.2.4 Articulate the different methods of calculating I.V. medication dose including rules of 6 and patient constant.

9.2.5 Describe the actions, pharmacokinetics, indications, contraindications, route of administration, adverse effects, drug incompatibilities/interactions of nonsteroidal anti-inflammatory drugs (NSAID).

9.2.6 Describe the actions, pharmacokinetics, indications, contraindications, route of administration, adverse effects, drug incompatibilities/interactions of ketamine HCl (Ketalar).

9.2.7 Describe the actions, pharmacokinetics, indications, contraindications, route of administration, adverse effects, drug incompatibilities/interactions of the following sedative agents:

- a. Benzodiazepines
  - a.1) Lorazepam (Ativan)
  - a.2) Diazepam (Valium)
  - a.3) Midazolam HCl (Versed)
- b. Butyrophenones
  - b.1) Haloperidol (Haldol)
  - b.2) Droperidol (Inapsine)
- c. Unclassifieds - Propofol (Diprivan)

9.2.8 Describe the actions, pharmacokinetics, indications, contraindications, route of administration, adverse effects, drug incompatibilities/interactions of the following paralytic agents:

- a. Depolarizing agents
- b. Succinylcholine (Anectine)
- c. Non-depolarizing agents
- d. Vecuronium (Norcuron)
- e. Pancuronium (Pavulon)
- f. Atracurium besylate (Tracrium)

9.2.9 Describe the actions, indications, contraindications, pharmacokinetics, route of administration, adverse effects, drug incompatibilities/interactions of the following hemodynamic drugs:

- a. Amrinone lactate (Inocor)
- b. Dobutamine HCl (Dobutrex)
- c. Labetalol (Normodyne, Trandate)
- d. Nitroprusside sodium (Nitropress, Nipride)

e. Norepinephrine (Levophed)
f. Milrinone lactate (Primacor)
g. Prostaglandin E
h. Digitalis (Digoxin, Lanoxin)

9.2.10 Describe the causes of chronic and crisis hypertension.

9.2.11 Define the physiology of ACE inhibitors.

9.2.12 Describe the physiologic mechanisms and effects on the body of the following antihypertensive agents:
a. Captopril (Capoten)
b. Nifedipine (Procardia)
c. Clonidine (Catapres)
d. Sodium nitroprusside (Nitropress, Nipride)
e. Labetalol HCl (Normodyne, Trandate)
f. Hydralazine HCl (Apresoline)

9.2.13 Define the physiology of anticholinergics, adrenergic antagonists and phosphodiesterase inhibitors.

9.2.14 Explain the indications, contraindications of the common medications used with nebulized inhalation treatments.

9.2.15 Describe the physiologic mechanisms and effects on the body of the following bronchodilating agents:
a. Metaproterenol (Alupent)
b. Terbutaline sulfate (Brethine, Bricanyl)
c. Theophyline
d. Ipratropium bromide (Atrovent)
e. Magnesium

9.2.16 Describe the actions, indications, contraindications, dose, route of administration, adverse effects, drug incompatibilities/interactions of the following antianginal agents:
a. Nitrates
a.1) Nitroglycerine
a.2) Isosorbide dinitrate
b. Beta blockers
c. Calcium channel blockers
c.1) Diltiazem HCl (Cardizem)
d. ACE inhibitors
d.1) Enalaprilat (Vasotec)
d.2) Quinapril (Accupril)
d.3) Ramipril (Altace)

9.2.17 Describe the actions, indications, contraindications, dose, route of administration, adverse effects, drug incompatibilities/interactions of the following thrombolytic agents:
a. Tissue plasminogen activator (TPA)
b. Streptokinase
c. Reteplase (Retavase)

9.2.18 Describe the actions, indications, contraindications, dose, route of administration, adverse effects, drug incompatibilities/interactions of the following anticoagulant/anti-platelet agents:
a. Aspirin (ASA)
b. Heparin
c. Warfarin (Coumadin)
d. Abciximab (Reopro)

e. Eptifibatide (Integrilin)
f. Tirofiban HCl (Aggrastat)
g. Low molecular weight heparin

9.2.19 Define the spectrum, sensitivity, tissue penetrations in antimicrobial therapy.
9.2.20 Describe the uses of antimicrobial therapy in relationship to viral infection.
9.2.21 Explain the differences between gram positive versus gram negative infections.
9.2.22 Identify a common example of the potential toxic effects and the organisms/infections affected by the following:

a. ABX Inhibiting Protein Synthesis
b. Aminoglycosides
c. Antifungals
d. Aztreonam
e. Carbapenams
f. Cephalosporins
g. Folate/DNA Synthesis Inhibitors
    g.1) Sulfa drugs
    g.2) Quinolones
h. Imipenem cilastatin (Primaxin)
i. Lincosamides
j. Macrolides
k. Penicillins
l. Tetracyclines
m. Vancomycin

9.2.23 Define the pharmacological antidote for:

a. Acetaminophen
    a.1) N-acetylcysteine (NAC)
b. Benzodiazepines
    b.1) Flumazenil (Romazicon)
    b.2) Beta blockers
c. Beta-receptor antagonists
    c.1) Glucagon
d. Calcium channel blockers
    d.1) Calcium
    d.2) Glucagon
    d.3) Catecholamines
e. Digitalis
    e.1) Magnesium
    e.2) Antiarrhythmic agents
    e.3) Dilantin
    e.4) Digoxin specific antibody therapy (Fab)
    e.5) Digibind
f. Nitroprusside
g. Cyanide antidote kit
    g.1) Thiosulfate

9.2.24 Explain liver and renal failure indications in children.
9.2.25 Identify conditions for approved and contraindicated use of antibiotics in children.

9.3. AFFECTIVE OBJECTIVES - Pharmacology

9.3.1 Support the use and administration of drugs to affect positive therapeutic effect.
9.3.2 Support the rationale for approved and contraindicated use of antibiotics in children.

9.4. PSYCHOMOTOR OBJECTIVES - Pharmacology

None required for this section

SECTION 10 Vascular Access

10.1. UNIT TERMINAL OBJECTIVE - Vascular Access

At the completion of this unit, the student will be able to discern and utilize a variety of catheters for vascular access.

10.2. COGNITIVE OBJECTIVES - Vascular Access

10.2.1 Compare and contrast peripheral versus central vascular access.
10.2.2 List the common insertion sites for non-tunneled catheters for central vascular access.
10.2.3 Describe the indications for use of single and multiple lumen catheters for central vascular access.
10.2.4 List the advantages and disadvantages of using single and multiple lumen catheters for central vascular access.
10.2.5 List the types and describe the indications for use of tunneled and non-tunneled catheters for central vascular access.
10.2.6 List the advantages and disadvantages of using tunneled and non-tunneled catheters for central vascular access.
10.2.7 Explain potential complications of tunneled and non-tunneled catheters used for central vascular access and management of during patient transport.
10.2.8 List the types and describe the indications for use of vascular access ports for central vascular access.
10.2.9 List the advantages and disadvantages of using vascular access ports for central vascular access.
10.2.10 Explain potential complications of vascular access port use for central vascular access and management of during patient transport.
10.2.11 Describe the indications for use of peripheral inserted central catheters (PICC).
10.2.12 List the advantages and disadvantages of using peripheral inserted central catheters.
10.2.13 Explain potential complications of peripheral inserted central catheters and their management during patient transport.
10.2.14 Describe the indications for use of single and multiple lumen catheters for peripheral vascular access.
10.2.15 List the advantages and disadvantages of using single and multiple lumen catheters for peripheral vascular access.
10.2.16 Explain potential complications of single and multiple lumen catheter use for peripheral vascular access and the management of during patient transport.
10.2.17 Describe the indications for use of intraosseous (IO) vascular access.
10.2.18 List the advantages and disadvantages of using intraosseous vascular access.
10.2.19 Explain potential complications of intraosseous vascular access and management during patient transport.

10.3. AFFECTIVE OBJECTIVES - Vascular Access

10.3.1 Support the rationale for central versus peripheral vascular access.

10.4. PSYCHOMOTOR OBJECTIVES - Vascular Access

10.4.1 Demonstrate the management of all pertinent vascular access devices for central and peripheral vascular access.

10.4.2 Demonstrate ability to recognize complications and initiate appropriate intervention measures for central and peripheral vascular access catheters.

SECTION 11 Invasive Hemodynamic Monitoring

11.1. UNIT TERMINAL OBJECTIVE - Invasive Hemodynamic Monitoring-

At the completion of this unit, the student will be able to conduct methods of invasive hemodynamic monitoring.

11.2. COGNITIVE OBJECTIVES – Invasive Hemodynamic Monitoring- Arterial Pressure Monitoring

11.2.1 Identify indications for arterial pressure monitoring.
11.2.2 Describe the physiologic parameters measured by arterial pressure monitoring.
11.2.3 List the equipment necessary to perform arterial pressure monitoring.
11.2.4 Identify types of arterial pressure catheters commonly used.
11.2.5 Identify the vessels used to monitor arterial pressure.
11.2.6 Describe the equipment necessary for establishing the arterial pressure line.
11.2.7 Explain how to zero calibrate the arterial pressure line.
11.2.8 Identify the normal morphology and measured range of arterial pressure waveforms.
11.2.9 Describe the normal range of an arterial pressure and the factors for increasing or decreasing arterial pressure.
11.2.10 Explain what affects arterial pressure waveforms.
11.2.11 Describe potential complications of an arterial pressure line and how to solve the complications.
11.2.12 Explain how to assess and secure an arterial pressure line for transport
11.2.13 Define "Mean Arterial Blood Pressure" (MAP).
11.2.14 Describe how to calculate MAP.
11.2.15 Identify the normal range of MAP and factors affecting elevation and decrease of MAP.

11.3. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Right Heart and Pulmonary Artery Monitoring

11.3.1 Identify the equipment necessary for right heart and pulmonary artery monitoring.
11.3.2 Identify types of right heart and pulmonary artery catheters commonly used.
11.3.3 Explain how to zero calibrate the right heart and pulmonary artery line.
11.3.4 Identify the vessels used to monitor the right heart and pulmonary artery.
11.3.5 Describe how to secure a right heart and pulmonary artery line for transport.

11.4. COGNITIVE OBJECTIVES – Invasive Hemodynamic Monitoring Central Venous Pressure (CVP) Monitoring

11.4.1 Identify indications for CVP monitoring.
11.4.2 Identify the physiologic parameters measured by CVP.
11.4.3 Identify the normal morphology and measured range of CVP waveforms.
11.4.4 Describe how to perform the direct measurement of a CVP.
11.4.5 Identify the normal range of CVP and the factors for increasing or decreasing CVP.
11.4.6 Define the factors that can affect the CVP waveform.
11.4.7 Identify potential complications of a CVP line and describe how to solve them.

11.5. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Right Ventricular Pressure (RVP) Monitoring

11.5.1 Identify indications for RVP monitoring.
11.5.2 Identify the physiologic parameters measured by RVP.

11.5.3 Identify the normal morphology and measured range of RVP waveforms.
11.5.4 Describe how to perform the direct measurement of RVP.
11.5.5 Identify the normal range of RVP and the factors for increasing or decreasing RVP.
11.5.6 Define the factors that affect the RVP waveform.
11.5.7 Identify potential complications of a RVP line and describe how to solve them.

11.6. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Pulmonary Artery Pressure (PAP) Monitoring

11.6.1 Identify indications for PAP monitoring.
11.6.2 Identify the physiologic parameters measured by PAP.
11.6.3 Identify the normal morphology and measured range of PAP waveforms.
11.6.4 Describe how to perform the direct measurement of a PAP.
11.6.5 Identify the normal range of PAP and the factors for increasing or decreasing PAP.
11.6.6 Define the factors that affect the PAP waveform.
11.6.7 Identify potential complications of a PAP line and describe how to solve them.

11.7. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Pulmonary Capillary Wedge Pressure (PCWP) Monitoring

11.7.1 Identify indications for PCWP monitoring.
11.7.2 Identify the physiologic parameters measured by PCWP.
11.7.3 Identify the normal morphology and measured range of PCWP waveforms.
11.7.4 Describe how to perform the direct measurement of a PCWP.
11.7.5 Identify the normal range of PCWP and the factors affecting elevation and decrease of PCWP.
11.7.6 Define the factors that affect the PCWP waveform.
11.7.7 Identify potential complications of a PCWP line and describe how to solve them.

11.8. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Systemic Vascular Resistance

11.8.1 Identify the cardiovascular physiologic measures that systemic vascular resistance SVR represents.
11.8.2 Describe how to calculate the SVR.
11.8.3 Identify the normal range of SVR and the medical conditions that increase and decrease SVR.

11.9. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring -Cardiac Output

11.9.1 Identify the cardiovascular physiologic measures that Cardiac Output (CO) represents.
11.9.2 Describe how to calculate CO.
11.9.3 Identify the normal range of CO and the medical conditions that increase or decrease CO.

11.10. COGNITIVE OBJECTIVES (optional) – Invasive Hemodynamic Monitoring Cardiac Index

11.10.1 Identify the cardiovascular physiologic measures that Cardiac Index (CI) represents.
11.10.2 Describe how to calculate the CI.
11.10.3 Identify the normal range of CI and the medical conditions that increase or decrease CI.

11.11. AFFECTIVE OBJECTIVES - Invasive Hemodynamic Monitoring

11.11.1 Support the rationale for invasive hemodynamic monitoring.

11.12. PSYCHOMOTOR OBJECTIVES - Invasive Hemodynamic Monitoring

11.12.1 Demonstrate the setup of equipment for an arterial pressure line.
11.12.2 Demonstrate how to zero calibrate the arterial pressure line.
11.12.3 Perform the direct measurement of an arterial pressure.
11.12.4 Demonstrate how to solve complications of an arterial pressure line.
11.12.5 Demonstrate how to assess and secure an arterial pressure line for transport**.**
11.12.6 Perform the calculation of mean arterial pressure.
11.12.7 Demonstrate the setup of equipment necessary for right heart and pulmonary artery line.
11.12.8 Demonstrate how to zero calibrate the right heart and pulmonary artery line.
11.12.9 Demonstrate how to assess and secure right heart and pulmonary artery lines for transport.
11.12.10 Perform the direct measurement of a central venous pressure.
11.12.11 Demonstrate how to solve complications of a central venous pressure line.

(OPTIONAL)

11.12.12 Perform the direct measurement of a right ventricular pressure.
11.12.13 Demonstrate how to solve complications of a right ventricular pressure line.
11.12.14 Perform the direct measurement of a pulmonary artery pressure.
11.12.15 Demonstrate how to solve complications of a pulmonary artery pressure line.
11.12.16 Perform the direct measurement of a pulmonary capillary wedge pressure.
11.12.17 Demonstrate how to solve complications of a pulmonary capillary wedge pressure line.
11.12.18 Demonstrate how to calculate systemic vascular resistance.
11.12.19 Demonstrate how to calculate cardiac output.
11.12.20 Demonstrate how to calculate cardiac index.

SECTION 12 Intraaortic Balloon Pump Utilization (Optional)

12.1. UNIT TERMINAL OBJECTIVE – Intraaortic Balloon Pump Utilization

At the completion of this unit, the student will be able to utilize and monitor an intraaortic balloon pump during a critical care patient transport.

12.2. COGNITIVE OBJECTIVES – Intraaortic Balloon Pump Utilization

12.2.1 Describe the basic cardiac anatomy and physiology of the cardiac pumping cycle.
12.2.2 Describe the mechanism of coronary perfusion.
12.2.3 Explain the causes of myocardial oxygen demand.
12.2.4 Define atrial and ventricular diastole, atrial and ventricular systole and atrial kick.
12.2.5 Describe the four main coronary arteries.
12.2.6 Explain the significance of cardiac output to intraaortic balloon pump operation, including normal ranges and medical conditions that can increase or decrease cardiac output.
12.2.7 Describe the indications for intraaortic balloon pump (IABP) use.
12.2.8 Identify the goals of intraaortic balloon pump pulsation.
12.2.9 Describe the principles of intraaortic balloon pump therapy.
12.2.10 Explain *Optimal Timing* and the corresponding arterial waveform.
12.2.11 Identify waveforms seen in early inflation, late inflation, early deflation, late deflation of IABP balloon and the physiologic response expected with each.
12.2.12 Define counter-pulsation.
12.2.13 Identify the triggers used to inflate the intraaortic balloon.
12.2.14 Describe the anatomical location of the intraaortic balloon and associated catheters.
12.2.15 Describe the effects of the intraaortic balloon pump.
12.2.16 Identify contraindication of intraaortic balloon pump pulsation.
12.2.17 Explain the effects of intraaortic balloon pump pulsation on afterload and coronary perfusion.
12.2.18 Describe the steps necessary to prepare a patient for intraaortic balloon pump transport.
12.2.19 Describe the specific areas and sites that should be assessed specific to the intraaortic balloon pump.
12.2.20 Describe lab values and patient history pertinent to the intraaortic balloon pump patient.
12.2.21 Describe the monitoring process during an intraaortic balloon pump transport.
12.2.22 Describe complications and interventions that may be taken on the intraaortic balloon pump patient.

12.3. AFFECTIVE OBJECTIVES – Intraaortic Balloon Pump Utilization

12.3.1 Support the rationale for critical care specialty teams for intraaortic balloon pump patient transfers.

12.4. PSYCHOMOTOR OBJECTIVES – Intraaortic Balloon Pump Utilization

12.4.1 Demonstrate the steps necessary to prepare a patient for transport with an intraaortic balloon pump.
12.4.2 Demonstrate the monitoring process to be performed during an intraaortic balloon pump transport.

12.4.3 Demonstrate interventions to complications that may be taken on the intraaortic balloon pump patient.

SECTION 13 Invasive Electrical Therapy

13.1. UNIT TERMINAL OBJECTIVE - Invasive Electrical Therapy

At the completion of this unit, the student will be able to anticipate, recognize and reconcile invasive electrical therapy complications in relationship to critical care transports.

13.2. COGNITIVE OBJECTIVES - Invasive Electrical Therapy

13.2.1 Define terminology associated with pacemaker type and modes.
13.2.2 Describe complications seen with cardiac pacemakers and solutions to the complications.
13.2.3 Describe the expected effect of a magnet over a pacemaker.
13.2.4 Identify the type and mode of pacemaker through 12 lead EKG evaluation.
13.2.5 Explain the effect of external pacing and defibrillation on a cardiac pacemaker.
13.2.6 Define terminology associated with Implantable Cardioverter Defibrillators (ICD) type and modes.
13.2.7 Describe complications seen with ICD and solutions to the complications.
13.2.8 Describe the expected effect of a magnet over an ICD.

13.3. AFFECTIVE OBJECTIVES - Invasive Electrical Therapy

13.3.1 Support the rationale/uses for implantable cardioverter defibrillators.

13.4. PSYCHOMOTOR OBJECTIVES - Invasive Electrical Therapy

13.4.1 Demonstrate the use of a magnet and its effect on a pacemaker.
13.4.2 Demonstrate the use of a magnet and its effect on an implantable cardioverter defibrillator.

SECTION 14 Airway Interventions

14.1. UNIT TERMINAL OBJECTIVE – Airway Interventions

At the completion of this unit, the student will be able to recognize the need for, perform and manage airway interventions.

14.2. COGNITIVE OBJECTIVES – Airway Interventions

14.2.1 Explain the indications and contraindications for tracheostomies.
14.2.2 Describe the advantages and disadvantages of tracheostomies.
14.2.3 List the equipment, supplies and medications necessary for tracheostomy management.
14.2.4 Describe tracheostomy management methods during patient transport and potential complications and interventions.
14.2.5 Explain the indications and contraindications for needle cricothyrotomy.
14.2.6 Describe the advantages and disadvantages of needle cricothyrotomy.
14.2.7 Explain the method for performing a needle cricothyrotomy.
14.2.8 List the equipment, supplies and medications necessary for conducting a needle cricothyrotomy.
14.2.9 Describe needle cricothyrotomy management methods during patient transport and potential complications and interventions.
14.2.10 Explain the indications and contraindications for a surgical cricothyrotomy.
14.2.11 Describe the advantages and disadvantages of a surgical cricothyrotomy.
14.2.12 Explain the method for performing a surgical cricothyrotomy.
14.2.13 List the equipment, supplies and medications necessary for conducting a surgical cricothyrotomy.
14.2.14 Describe surgical cricothyrotomy management methods during patient transport and potential complications and interventions.
14.2.15 Explain the contraindication of cricothyrotomy in pediatric patients**.**
14.2.16 Explain the indications and contraindications for chest tube decompression.
14.2.17 Describe the advantages and disadvantages of chest tube decompression.
14.2.18 Explain the method for performing chest tube decompression.
14.2.19 List the equipment, supplies and medications necessary for conducting chest tube decompression.
14.2.20 Describe chest tube decompression management methods during patient transport and potential complications and interventions.

14.3. AFFECTIVE OBJECTIVES – Airway Interventions

14.3.1 Support the rationale for conducting invasive airway management interventions.

14.4. PSYCHOMOTOR OBJECTIVES – Airway Interventions

14.4.1 Demonstrate tracheostomy assessment and management.
14.4.2 Demonstrate needle cricothyrotomy assessment and placement.
14.4.3 Demonstrate surgical cricothyrotomy assessment and placement.
14.4.4 Demonstrate chest tube assessment and placement.

SECTION 15 Mechanical Ventilation

15.1. UNIT TERMINAL OBJECTIVE – Mechanical Ventilation

At the completion of this unit, the student will be able to utilize and monitor mechanical ventilation during a critical care patient transport.

15.2. COGNITIVE OBJECTIVES – Mechanical Ventilation

15.2.1 Explain the physiology of pulmonary function values including:
- a. Inspiratory respiratory reserve
- b. Inspiratory capacity
- c. Expiratory reserve volume
- d. Residual volume
- e. Functional residual capacity

15.2.2 Identify the respiratory parameters indicating patient candidacy for mechanical ventilation.

15.2.3 Describe positive and negative pressure ventilation.

15.2.4 Compare and contrast pressure limited and volume limited ventilators.

15.2.5 Identify components of mechanical ventilation equipment and their functions.

15.2.6 Describe the effects of mechanical ventilation on the pulmonary and cardiovascular systems including barotrauma, cardiac preload, afterload and output.

15.2.7 Define normal settings for pressure limited transport ventilators for the following:
- a. Tidal volume
- b. Mechanical sigh
- c. End respiratory pressure
- d. Respiratory rate
- e. FiO2
- f. Flow rate
- g. Positive inspiratory pressure (PIP)
- h. Minute ventilation
- i. Pressure limit
- j. Pressure support
- k. Positive end expiratory pressure (PEEP)

15.2.8 Describe the clinical uses, precautions and limitations, and adverse effects of the following standard modes of pressure limited ventilation:
- a. Controlled mandatory ventilation (CMV)
- b. Assist control (A/C)
- c. Intermittent mandatory ventilation (IMV)
- d. Synchronized intermittent mandatory ventilation (SIMV)
- e. Pressure support ventilations
- f. Continuous positive airway pressure (CPAP)
- g. Positive end expiratory pressure (PEEP)

15.2.9 Describe assessment and calculations of pediatric tidal volumes and pressures.

15.2.10 Define oxygen toxicity and the clinical effects on pediatric patients from neonates to adolescents.

15.2.11 Describe the effects of patient activity on mechanical activity.

15.2.12 Explain the common treatment modes and complications of treatments for the ventilator-dependent child.

15.2.13 List equipment, personnel and vehicle requirements for the ventilator-dependent child.

15.3. AFFECTIVE OBJECTIVES – Mechanical Ventilation

15.3.1 Support the use of mechanical ventilation.

15.4. PSYCHOMOTOR OBJECTIVES – Mechanical Ventilation

15.4.1 Demonstrate assessment and calculations of pediatric and adult tidal volumes and pressures.

15.4.2 Perform appropriate operation of mechanical ventilation equipment in the following modes:

a. Controlled mandatory ventilation (CMV)
b. Assist control (A/C)
c. Intermittent mandatory ventilation (IMV)
d. Synchronized intermittent mandatory ventilation (SIMV)
e. Pressure support ventilation
f. Continuous positive airway pressure (CPAP)
g. Positive end expiratory pressure (PEEP)

SECTION 16 Gastrointestinal / Urinary Devices

16.1. UNIT TERMINAL OBJECTIVE – Gastrointestinal / Urinary Devices

At the completion of this unit, the student will be able to utilize and monitor gastrointestinal and gastro-urinary devices during a critical care patient transport.

16.2. COGNITIVE OBJECTIVES - Gastrointestinal / Urinary Devices

16.2.1 Identify the rationale, indications and contraindications for using nasogastric (NG) versus orogastric (OG) tubes.
16.2.2 List the types of NG and OG tubes.
16.2.3 Explain NG and OG tube assessments that occur prior to patient transport.
16.2.4 Describe NG and OG tube management during patient transports.
16.2.5 Identify potential complications of NG and OG tubes and appropriate interventions.
16.2.6 Describe the method and rationale for inserting NG and OG tubes as well as potential complications and interventions.
16.2.7 Describe types of feeding tubes including percutaneous endoscopic gastrostomy (PEG) tubes and jejunostomy tubes.
16.2.8 Explain feeding tube assessments that occur prior to patient transport.
16.2.9 Describe feeding tube management during patient transports.
16.2.10 Identify potential complications of feeding tubes and appropriate interventions, including all necessary equipment.
16.2.11 List and describe the indications for the different types of urinary catheters.
16.2.12 Describe the method and rationale for inserting urinary catheters as well as potential complications and interventions.
16.2.13 Explain how to assess urinary catheters prior to patient transport.
16.2.14 Identify the indications and equipment for use, assessment and management protocols, and potential complications and interventions with suprapubic urinary catheters.
16.2.15 Explain the indications for use, care requirements and supplies needed for ileostomies.
16.2.16 Describe how to assess an ileostomy by location, skin, drainage and collection device.
16.2.17 Describe the types and locations for colostomies.
16.2.18 Explain the indications for use, care requirements and supplies needed for a colostomy.
16.2.19 Describe how to assess a colostomy by location, skin, drainage and collection device.
16.2.20 Explain the indications for use, care requirements and supplies needed for a ureterostomy.
16.2.21 Describe how to assess an ureterostomy by location, skin, drainage and collection device.

16.3. AFFECTIVE OBJECTIVES.- Gastrointestinal / Urinary Devices

16.3.1 Support the rationale for critical care management of gastrointestinal and gastro-urinary devices.

16.4. PSYCHOMOTOR OBJECTIVES - Gastrointestinal / Urinary Devices

16.4.1 Demonstrate NG and OG tube assessments and insertions.
16.4.2 Demonstrate urinary catheter assessment and management.
16.4.3 Demonstrate ileostomy assessment and management.
16.4.4 Demonstrate colostomy assessment and management.

SECTION 17 Intracranial Pressure Monitoring (Optional)

17.1. UNIT TERMINAL OBJECTIVE – Intracranial Pressure Monitoring

At the completion of this unit, the student will be able to conduct intracranial pressure monitoring during a critical care patient transport.

17.2. COGNITIVE OBJECTIVES – Intracranial Pressure Monitoring

17.2.1 Explain cerebral perfusion pressure.
17.2.2 Describe the calculation of cerebral perfusion pressure.
17.2.3 Explain the significance of cerebral perfusion pressure and expected perfusion at any given value.
17.2.4 Explain the function, purpose and differences between the following types of intracranial pressure monitors—
    a. Interventricular cannula
    b. Epidural catheter
    c. Subdural/subarachnoid screw and bolt
    d. Fiber optic transducer tipped probe (Camino)
17.2.5 Describe the indications for and placement of monitoring devices by type.
17.2.6 Explain the advantages and disadvantages of interventricular cannula intracranial pressure monitoring.
17.2.7 Describe the normal and abnormal waveform morphologies of interventricular cannula intracranial pressure monitoring.
17.2.8 Explain the complications and risks of interventricular cannula intracranial pressure monitoring.
17.2.9 Describe options for troubleshooting interventricular cannula intracranial pressure monitoring
17.2.10 List considerations that must be taken into account when transporting a patient with intraventricular cannula intracranial pressure monitoring.
17.2.11 Explain how to drain the intraventricular cannula for reducing intracranial pressure.
17.2.12 Explain how to chart intracranial pressure trends.
17.2.13 Explain the function of cerebral spinal fluid pressure monitoring.
17.2.14 Describe the advantages and disadvantages of cerebral spinal fluid pressure monitoring.
17.2.15 Explain the normal waveform morphology of cerebral spinal fluid pressure monitoring.
17.2.16 Describe cerebral spinal fluid pressure drainage and potential complications from it.
17.2.17 Explain the complications and risks of cerebral spinal fluid pressure monitoring.
17.2.18 Describe options for troubleshooting potential complications of cerebral spinal fluid pressure monitoring.
17.2.19 List considerations that must be taken into account when transporting a patient with cerebral spinal fluid pressure monitoring.
17.2.20 Explain the function of intraparenchymal pressure monitoring.
17.2.21 Describe the advantages and disadvantages of intraparenchymal pressure monitoring.
17.2.22 Explain the normal waveform morphology of intraparenchymal pressure monitoring.
17.2.23 Explain the potential complications and risks of intraparenchymal pressure monitoring.
17.2.24 Describe options for troubleshooting potential complications of intraparenchymal pressure monitoring.
17.2.25 List considerations that must be taken into account when transporting a patient with intraparenchymal pressure monitoring.
17.2.26 Explain the function of subarachnoid pressure monitoring.
17.2.27 Describe the advantages and disadvantages of subarachnoid pressure monitoring.

17.2.28 Explain the normal waveform morphology of subarachnoid pressure monitoring.
17.2.29 Explain the potential complications and risks of subarachnoid pressure monitoring.
17.2.30 Describe options for troubleshooting potential complications of subarachnoid pressure monitoring.
17.2.31 List considerations that must be taken into account when transporting a patient with subarachnoid pressure monitoring.

17.3. AFFECTIVE OBJECTIVES – Intracranial Pressure Monitoring

17.3.1 Support the rationale for cerebral spinal fluid, intraparenchymal and subarachnoid pressure monitoring during the transport of patients with neurological disorders.
17.3.2 Support the rationale for invasive intracranial pressure monitoring during the transport of patients with neurological disorders.

17.4. PSYCHOMOTOR OBJECTIVES – Intracranial Pressure Monitoring

17.4.1 Demonstrate the calculation of cerebral perfusion pressure.
17.4.2 Perform intracranial pressure monitoring utilizing interventricular cannula, epidural catheter, subdural/subarachnoid screw, bolt, and fiber optic transducer-tipped probe monitoring devices.
17.4.3 Demonstrate ability to troubleshoot complications of invasive intracranial pressure monitoring devices.
17.4.4 Demonstrate intracranial pressure monitoring utilizing cerebral spinal fluid pressure monitoring techniques.
17.4.5 Demonstrate ability to perform and interpret cerebral spinal fluid pressure monitoring.
17.4.6 Demonstrate ability to perform and interpret intraparenchymal monitoring.
17.4.7 Demonstrate common troubleshooting techniques for complications of cerebral spinal fluid, intraparenchymal and subarachnoid pressure monitoring.

SECTION 18 Fluid and Blood Administration

18.1. UNIT TERMINAL OBJECTIVE – Fluid and Blood Administration

At the completion of this unit, the student will be able to conduct methods of fluid and blood administration.

18.2. COGNITIVE OBJECTIVES – Fluid and Blood Administration

18.2.1 Explain indications, contraindications, precautions and complications of using packed red blood cells (PRBC's).

18.2.2 Describe the method of administering packed red blood cells including required equipment, size of IV access, fluid required, volume in one unit and rate of infusion.

18.2.3 List the steps for safe administration and monitoring after an infusion of packed red blood cells.

18.2.4 Describe requirements for transporting packed red blood cells.

18.2.5 Explain indications, contraindications, precautions and complications of using whole blood.

18.2.6 Describe the method of administering whole blood including required equipment, size of IV access, fluid required, volume in one unit and rate of infusion.

18.2.7 List the steps for safe administration of and monitoring after an infusion of whole blood.

18.2.8 Describe requirements for transporting whole blood.

18.2.9 Explain indications, contraindications, precautions and complications of using platelets.

18.2.10 Describe the method of administering platelets including required equipment, size of IV access, fluid required, volume in one unit and rate of infusion.

18.2.11 List the steps for safe administration of and monitoring after an infusion of platelets.

18.2.12 Describe requirements for transporting platelets.

18.2.13 Explain indications, contraindications, precautions and complications of using albumin.

18.2.14 Describe the method of administering albumin including required equipment, size of IV access, fluid required, volume in one unit and rate of infusion.

18.2.15 List the steps for safe administration of and monitoring after an infusion of albumin.

18.2.16 Describe requirements for transporting albumin.

18.2.17 Explain indications, contraindications, precautions and complications of using fresh frozen plasma.

18.2.18 Describe the method of administering fresh frozen plasma including required equipment, size of IV access, fluid required, volume in one unit and rate of infusion.

18.2.19 List the steps for safe administration of and monitoring after an infusion of fresh frozen plasma.

18.2.20 Describe requirements for transporting fresh frozen plasma.

18.2.21 Describe the precautions necessary for the administration of blood products to pediatric patients.

18.2.22 Describe methods for administering blood products including the use of filters, intravenous fluids and premedicating the patient.

18.2.23 Describe the mechanism, signs and symptoms, timing and treatment for the following blood transfusion reactions:

a. Hemolytic
b. Anaphylactic
c. Febrile
d. Circulatory overload

18.2.24 Explain the indications, contraindications, precautions and complications of using non-blood volume expanders of hetastarch, plasma protein faction, and hypertonic saline.

18.2.25 Describe methods for administering non-blood volume expanders of hetastarch, plasma protein faction, and hypertonic saline including required equipment, size of IV access, fluid required, and rate of infusion.

18.2.26 List the steps for safe administration of and monitoring after infusing non-blood volume expanders of hetastarch, plasma protein faction, and hypertonic saline.

18.2.27 Describe requirements for transporting hetastarch, plasma protein faction, and hypertonic saline.

18.3. AFFECTIVE OBJECTIVES – Fluid and Blood Administration

18.3.1 Support the rationale for fluid and blood product administration with critical care patient transports.

18.4. PSYCHOMOTOR OBJECTIVES – Fluid and Blood Administration

18.4.1 Demonstrate methods for administering blood products including the use of filters, intravenous fluids and premedicating the patient.

SECTION 19 Air Medical Transports

19.1. UNIT TERMINAL OBJECTIVE – Air Medical Transports

At the completion of this unit, the student will be able to integrate pathophysiological principles and assessment findings to assist with the decision making regarding the transportation of critical care patient by an air medical service

19.2. COGNITIVE OBJECTIVES – Air Medical Transports

19.2.1 Define Boyle's law and relate the effects on the respiratory, GI and GU systems, pregnancy and a given constant temperature.

19.2.2 Define Charles' law and relate the effects on the respiratory, GI and GU systems, pregnancy and a given constant pressure.

19.2.3 Define Dalton's law and relate the effects on the respiratory, GI and GU systems and pregnancy .

19.2.4 Identify stressors of flight and interventions to correct them.

19.2.5 Define, identify the signs and symptoms of and list the treatments for the following in relationship to the air medical environment:

a. Barotrauma
b. Barosinusitis
c. Barodontalgia
d. Barotitis media
e. Decompression sickness

19.2.6 Identify the effects, causes and emergency procedures for rapid decompression.

19.2.7 Identify different classes of aircraft and stressors unique to each including—

a. Fixed wing vs. rotor wing
b. Pressurized vs. non-pressurized
c. Twin vs. single-engine aircraft
d. Weight considerations and aircraft performance

19.2.8 Compare and contrast patient preparation activities for air versus ground transports.

19.2.9 Compare and contrast the benefits of air versus ground transportation for critical care transport.

19.3. AFFECTIVE OBJECTIVES – Air Medical Transports

19.3.1 Support the rationale for utilizing air versus ground transport vehicles for critical care patients.

19.4. PSYCHOMOTOR OBJECTIVES – Air Medical Transports

19.4.1 Demonstrate through calculation the volume change, when at a constant temperature, as altitude increases or decreases (Boyle's laws).

19.4.2 Demonstrate through calculation the volume change, when at a constant pressure, as temperature increases or decreases (Charles' law).

19.4.3 Perform patient preparation activities for transport by aircraft

SECTION 20 EMS OPERATIONS

EMS SYSTEM OVERVIEW- UNIT TERMINAL OBJECTIVE

20.1. At the completion of this unit, the provider will understand his or her roles and responsibilities within an EMS system, and how these roles and responsibilities differ from other levels of providers.

EMS SYSTEM OVERVIEW- COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.1.1 Define the following terms: (C-1)
- a. EMS Systems
- b. Licensure
- c. Certification
- d. Registration
- e. Profession
- f. Professionalism
- g. Health care professional
- h. Ethics
- i. Peer review
- j. Medical direction
- k. Protocols

20.1.2 Describe key historical events that influenced the development of national Emergency Medical Services (EMS) systems. (C-1)

20.1.3 Identify national groups important to the development, education, and implementation of EMS. (C-1)

20.1.4 Differentiate among the four nationally recognized levels of EMS training/education, leading to licensure/certification/registration. (C-1)

20.1.5 Describe the attributes of a provider as a health care professional. (C-1)

20.1.6 Describe the recognized levels of EMS training/education, leading to licensure/ certification in his or her state. (C-1)

20.1.7 Explain provider licensure/certification, recertification, and reciprocity requirements in his or her state. (C-1)

20.1.8 Evaluate the importance of maintaining one's provider license/certification. (C-3)

20.1.9 Describe the benefits of provider continuing education. (C-1)

20.1.10 List current state requirements for provider education in his/her state. (C-1)

20.1.11 Discuss the role of national associations and of a national registry agency. (C-1)

20.1.12 Discuss current issues in his/her state impacting EMS. (C-1)

20.1.13 Discuss the roles of various EMS standard-setting agencies. (C-1)

20.1.14 Identify the standards (components) of an EMS System as defined by the National Highway Traffic Safety Administration. (C-1)

20.1.15 Describe how professionalism applies to the provider while on and off duty. (C-1)

20.1.16 Describe examples of professional behaviors in the following areas: integrity, empathy, self-motivation, appearance and personal hygiene, self-confidence, communications, time management, teamwork and diplomacy, respect, patient advocacy, and careful delivery of service. (C-1)

20.1.17 Provide examples of activities that constitute appropriate professional behavior for a provider. (C-2)

20.1.18 Describe the importance of quality EMS research to the future of EMS. (C-3)

20.1.19 Identify the benefits of providers teaching in their community. (C-1)
20.1.20 Describe what is meant by "citizen involvement in the EMS system." (C-1)
20.1.21 Analyze how the provider can benefit the health care system by supporting primary care to patients in the out-of-hospital setting. (C-3)
20.1.22 List the primary and additional responsibilities of providers. (C-1)
20.1.23 Describe the role of the EMS physician in providing medical direction. (C-1)
20.1.24 Describe the benefits of medical direction, both on-line and off-line. (C-1)
20.1.25 Describe the process for the development of local policies and protocols. (C-2)
20.1.26 Provide examples of local protocols. (C-1)
20.1.27 Discuss prehospital and out-of-hospital care as an extension of the physician. (C-1)
20.1.28 Describe the relationship between a physician on the scene, the provider on the scene, and the EMS physician providing on-line medical direction. (C-1)
20.1.29 Describe the components of continuous quality improvement. (C-1)
20.1.30 Analyze the role of continuous quality improvement with respect to continuing medical education and research. (C-3)
20.1.31 Define the role of the provider relative to the safety of the crew, the patient, and bystanders. (C-1)
20.1.32 Identify local health care agencies and transportation resources for patients with special needs. (C-1)
20.1.33 Describe the role of the provider in health education activities related to illness and injury prevention. (C-1)
20.1.34 Describe the importance and benefits of research. (C-2)
20.1.35 Explain the EMS provider's role in data collection. (C-1)
20.1.36 Explain the basic principles of research. (C-1)
20.1.37 Describe a process of evaluating and interpreting research. (C-3)

EMS SYSTEM OVERVIEW- AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.1.38 Assess personal practices relative to the responsibility for personal safety, the safety of the crew, the patient, and bystanders. (A-3)
20.1.39 Serve as a role model for others relative to professionalism in EMS. (A-3)
20.1.40 Value the need to serve as the patient advocate inclusive of those with special needs, alternate life styles and cultural diversity. (A-3)
20.1.41 Defend the importance of continuing medical education and skills retention. (A-3)
20.1.42 Advocate the need for supporting and participating in research efforts aimed at improving EMS systems. (A-3)
20.1.43 Assess personal attitudes and demeanor that may distract from professionalism. (A-3)
20.1.44 Value the role that family dynamics play in the total care of patients. (A-3)
20.1.45 Advocate the need for injury prevention, including abusive situations. (A-1)
20.1.46 Exhibit professional behaviors in the following areas: integrity, empathy, self-motivation, appearance and personal hygiene, self-confidence, communications, time management, teamwork and diplomacy, respect, patient advocacy, and careful delivery of service. (A-2)

EMS SYSTEM OVERVIEW- PSYCHOMOTOR OBJECTIVES

None identified for this unit.

PROVIDER WELLNESS- UNIT TERMINAL OBJECTIVE

20.2. At the completion of this unit, the provider will understand and value the importance of personal wellness in EMS and serve as a healthy role model for peers.

PROVIDER WELLNESS- COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.2.1 Discuss the concept of wellness and its benefits. (C-1)
20.2.2 Define the components of wellness. (C-1)
20.2.3 Describe the role of the provider in promoting wellness. (C-1)
20.2.4 Discuss the components of wellness associated with proper nutrition. (C-1)
20.2.5 List principles of weight control. (C-1)
20.2.6 Discuss how cardiovascular endurance, muscle strength, and flexibility contribute to physical fitness. (C-2)
20.2.7 Describe the impact of shift work on circadian rhythms. (C-1)
20.2.8 Discuss how periodic risk assessments and knowledge of warning signs contribute to cancer and cardiovascular disease prevention. (C-1)
20.2.9 Differentiate proper from improper body mechanics for lifting and moving patients in emergency and non-emergency situations. (C-3)
20.2.10 Describe the problems that a provider might encounter in a hostile situation and the techniques used to manage the situation. (C-1)
20.2.11 Given a scenario involving arrival at the scene of a motor vehicle collision, assess the safety of the scene and propose ways to make the scene safer. (C-3)
20.2.12 List factors that contribute to safe vehicle operations. (C-1)
20.2.13 Describe the considerations that should be given to: (C-1)
    a. Using escorts
    b. Adverse environmental conditions
    c. Using lights and siren
    d. Proceeding through intersections
    e. Parking at an emergency scene
20.2.14 Discuss the concept of "due regard for the safety of all others" while operating an emergency vehicle. (C-1)
20.2.15 Describe the equipment available for self-protection when confronted with a variety of adverse situations. (C-1)
20.2.16 Describe the benefits and methods of smoking cessation. (C-1)
20.2.17 Describe the three phases of the stress response. (C-1)
20.2.18 List factors that trigger the stress response. (C-1)
20.2.19 Differentiate between normal/healthy and detrimental reactions to anxiety and stress. (C-3)
20.2.20 Describe the common physiological and psychological effects of stress. (C-1)
20.2.21 Identify causes of stress in EMS. (C-1)
20.2.22 Describe behavior that is a manifestation of stress in patients and those close to them and how these relate to provider stress. (C-1)
20.2.23 Identify and describe the defense mechanisms and management techniques commonly used to deal with stress. (C-1)
20.2.24 Describe the components of critical incident stress management (CISM). (C-1)
20.2.25 Provide examples of situations in which CISM would likely be beneficial to providers. (C-1)
20.2.26 Given a scenario involving a stressful situation, formulate a strategy to help cope with the stress. (C-3)

20.2.27 Describe the stages of the grieving process (Kubler-Ross). (C-1)
20.2.28 Describe the needs of the provider when dealing with death and dying. (C-1)
20.2.29 Describe the unique challenges for providers in dealing with the needs of children and other special populations related to their understanding or experience of death and dying. (C-1)
20.2.30 Discuss the importance of universal precautions and body substance isolation practices. (C-1)
20.2.31 Describe the steps to take for personal protection from airborne and bloodborne pathogens. (C-1)
20.2.32 Given a scenario in which equipment and supplies have been exposed to body substances, plan for the proper cleaning, disinfection, and disposal of the items. (C-3)
20.2.33 Explain what is meant by an exposure and describe principles for management. (C-1)

PROVIDER WELLNESS- AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.2.34 Advocate the benefits of working toward the goal of total personal wellness. (A-2)
20.2.35 Serve as a role model for other EMS providers in regard to a total wellness lifestyle. (A-3)
20.2.36 Value the need to assess his/her own lifestyle. (A-2)
20.2.37 Challenge him/herself to each wellness concept in his/her role as a provider. (A-3)
20.2.38 Defend the need to treat each patient as an individual, with respect and dignity. (A-2)
20.2.39 Assess his/her own prejudices related to the various aspects of cultural diversity. (A-3)
20.2.40 Improve personal physical well being through achieving and maintaining proper body weight, regular exercise and proper nutrition. (A-3)
20.2.41 Promote and practice stress management techniques. (A-3)
20.2.42 Defend the need to respect the emotional needs of dying patients and their families. (A-3)
20.2.43 Advocate and practice the use of personal safety precautions in all scene situations. (A-3)
20.2.44 Advocate and serve as a role model for other EMS providers relative to body substance isolation practices. (A-3)

PROVIDER WELLNESS-PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the provider will be able to:

20.2.45 Demonstrate safe methods for lifting and moving patients in emergency and non-emergency situations. (P-2)
20.2.46 Demonstrate the proper procedures to take for personal protection from disease. (P-2)

EMS MEDICAL - LEGAL - UNIT TERMINAL OBJECTIVE

20.3. At the completion of this unit, the provider will understand the legal issues that impact decisions made in the out-of-hospital environment.

EMS MEDICAL- LEGAL - COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.3.1 Differentiate between legal and ethical responsibilities. (C-2)
20.3.2 Describe the basic structure of the legal system in the United States. (C-1)

20.3.3 Differentiate between civil and criminal law as it pertains to the provider. (C-1)
20.3.4 Identify and explain the importance of laws pertinent to the provider. (C-1)
20.3.5 Differentiate between licensure and certification as they apply to the provider. (C-1)
20.3.6 List the specific problems or conditions encountered while providing care that a provider is required to report, and identify in each instance to whom the report is to be made. (C-1)
20.3.7 Define the following terms: (C-1)
- a. Abandonment
- b. Advance directives
- c. Assault
- d. Battery
- e. Breach of duty
- f. Confidentiality
- g. Consent (expressed, implied, informed, involuntary)
- h. Do not resuscitate (DNR) orders
- i. Duty to act
- j. Emancipated minor
- k. False imprisonment
- l. Immunity
- m. Liability
- n. Libel
- o. Minor
- p. Negligence
- q. Proximate cause
- r. Scope of practice
- s. Slander
- t. Standard of care
- u. Tort

20.3.8 Differentiate between the scope of practice and the standard of care for provider practice. (C-3)
20.3.9 Discuss the concept of medical direction, including off-line medical direction and on-line medical direction, and its relationship to the standard of care of a provider. (C-1)
20.3.10 Describe the four elements that must be present in order to prove negligence. (C-1)
20.3.11 Given a scenario in which a patient is injured while a provider is providing care, determine whether the four components of negligence are present. (C-2)
20.3.12 Given a scenario, demonstrate patient care behaviors that would protect the provider from claims of negligence. (C-3)
20.3.13 Explain the concept of liability as it might apply to provider practice, including physicians providing medical direction and provider supervision of other care providers. (C-2)
20.3.14 Discuss the legal concept of immunity, including Good Samaritan statutes and governmental immunity, as it applies to the provider. (C-1)
20.3.15 Explain the importance and necessity of patient confidentiality and the standards for maintaining patient confidentiality that apply to the provider. (C-1)
20.3.16 Differentiate among expressed, informed, implied, and involuntary consent. (C-2)
20.3.17 Given a scenario in which a provider is presented with a conscious patient in need of care, describe the process used to obtain consent. (C-2)
20.3.18 Identify the steps to take if a patient refuses care. (C-1)
20.3.19 Given a scenario, demonstrate appropriate patient management and care techniques in a refusal of care situation. (C-3)

20.3.20 Describe what constitutes abandonment. (C-1)
20.3.21 Identify the legal issues involved in the decision not to transport a patient, or to reduce the level of care being provided during transportation. (C-1)
20.3.22 Describe how hospitals are selected to receive patients based on patient need and hospital capability and the role of the provider in such selection. (C-1)
20.3.23 Differentiate between assault and battery and describe how to avoid each. (C-2)
20.3.24 Describe the conditions under which the use of force, including restraint, is acceptable. (C-1)
20.3.25 Explain the purpose of advance directives relative to patient care and how the provider should care for a patient who is covered by an advance directive. (C-1)
20.3.26 Discuss the responsibilities of the provider relative to resuscitation efforts for patients who are potential organ donors. (C-1)
20.3.27 Describe the actions that the provider should take to preserve evidence at a crime or accident scene. (C-1)
20.3.28 Describe the importance of providing accurate documentation (oral and written) in substantiating an incident. (C-1)
20.3.29 Describe the characteristics of a patient care report required to make it an effective legal document. (C-1)
20.3.30 Given a scenario, prepare a patient care report, including an appropriately detailed narrative. (C-2)

EMS MEDICAL- LEGAL - AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.3.31 Advocate the need to show respect for the rights and feelings of patients. (A-3)
20.3.32 Assess his/her personal commitment to protecting patient confidentiality. (A-3)
20.3.33 Given a scenario involving a new employee, explain the importance of obtaining consent for adults and minors. (A-2)
20.3.34 Defend personal beliefs about withholding or stopping patient care. (A-3)
20.3.35 Defend the value of advance medical directives. (A-3)

EMS MEDICAL LEGAL - PSYCHOMOTOR OBJECTIVES

None identified for this unit.

EMS ETHICS- UNIT TERMINAL OBJECTIVE

20.4. At the completion of this unit, the provider will understand the role that ethics plays in decision making in the out-of-hospital environment.

EMS ETHICS- COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.4.1 Define ethics. (C-1)
20.4.2 Distinguish between ethical and moral decisions. (C-3)
20.4.3 Identify the premise that should underlie the provider's ethical decisions in out-of-hospital care. (C-1)
20.4.4 Analyze the relationship between the law and ethics in EMS. (C-3)
20.4.5 Compare and contrast the criteria that may be used in allocating scarce EMS resources. (C-3)
20.4.6 Identify the issues surrounding the use of advance directives in making a prehospital resuscitation decision. (C-1)

20.4.7 Describe the criteria necessary to honor an advance directive in your state. (C-1)

EMS ETHICS- AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.4.8 Value the patient's autonomy in the decision-making process. (A-2)
20.4.9 Defend the following ethical positions: (A-3)
- a. The provider is accountable to the patient.
- b. The provider is accountable to the medical director.
- c. The provider is accountable to the EMS system.
- d. The provider is accountable for fulfilling the standard of care.

20.4.10 Given a scenario, defend or challenge a provider's actions concerning a patient who is treated against his/her wishes. (A-3)
20.4.11 Given a scenario, defend a provider's actions in a situation where a physician orders therapy the provider feels to be detrimental to the patient's best interests. (A-3)

EMS ETHICS- PSYCHOMOTOR OBJECTIVES

None identified for this unit.

AMBULANCE OPERATIONS- UNIT TERMINAL OBJECTIVE

20.5. At the completion of this unit, the provider will understand standards and guidelines that help ensure safe and effective ground and air medical transport.

AMBULANCE OPERATIONS- COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.5.1 Identify current local and state standards that influence ambulance design, equipment requirements and staffing of ambulances. (C-1)
20.5.2 Discuss the importance of completing an ambulance equipment/supply checklist. (C-1)
20.5.3 Discuss the factors to be considered when determining ambulance stationing within a community. (C-1)
20.5.4 Compare and contrast the differences in providing patient care in an ambulance vs. a medical facility associated with
- a. equipment
- b. motion
- c. environment
- d. resources

AMBULANCE OPERATIONS- AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.5.5 Assess personal practices relative to ambulance operations which may affect the safety of the crew, the patient and bystanders. (A-3)
20.5.6 Serve as a role model for others relative to the operation of ambulances. (A-3)
20.5.7 Value the need to serve as the patient advocate to ensure appropriate patient transportation via ground or air. (A-2)

AMBULANCE OPERATIONS- PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the provider will be able to:

20.5.8 Demonstrate how to place a patient in, and remove a patient from, an ambulance.
20.5.9 Demonstrate the use of all on-board medical equipment in the ambulance.

INCIDENT MANAGEMENT- UNIT TERMINAL OBJECTIVE

20.6. At the completion of this unit, the provider will be able to integrate the principles of general incident management and multiple casualty incident (MCI) management techniques in order to function effectively at major incidents.

INCIDENT MANAGEMENT- COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.6.1 Explain the need for the incident management system (IMS)/incident command system (ICS) in managing emergency medical services incidents. (C-1)
20.6.2 Define the term multiple casualty incident (MCI). (C-1)
20.6.3 Define the term disaster management. (C-1)
20.6.4 Describe essential elements of scene size-up when arriving at a potential MCI. (C-1)
20.6.5 Describe the role of the providers and EMS systems in planning for MCIs and disasters. (C-1)
20.6.6 Define the following types of incidents and how they affect medical management: (C-1)
    a. Open or uncontained incident
    b. Closed or contained incident
20.6.7 Describe the functional components of the incident management system in terms of the following: (C-1)
    a. Command
    b. Finance
    c. Logistics
    d. Operations
    e. Planning
20.6.8 Differentiate between singular and unified command and when each is most applicable. (C-3)
20.6.9 Describe the role of command. (C-1)
20.6.10 Describe the need for transfer of command and procedures for transferring it. (C-1)
20.6.11 Differentiate between command procedures used at small, medium and large scale medical incidents. (C-1)
20.6.12 Explain the local/regional threshold for establishing command and implementation of the incident management system including threshold MCI declaration. (C-1)
20.6.13 List and describe the functions of the following groups and leaders in ICS as it pertains to EMS incidents: (C-1)
    a. Safety
    b. Logistics
    c. Rehabilitation (rehab)
    d. Staging
    e. Treatment
    f. Triage
    g. Transportation
    h. Extrication/rescue
    i. Disposition of deceased (morgue)
20.6.14 Communications

20.6.15 Describe the methods and rationale for identifying specific functions and leaders for these functions in ICS. (C-1)
20.6.16 Describe the role of both command posts and emergency operations centers in MCI and disaster management. (C-1)
20.6.17 Describe the role of the physician at multiple casualty incidents. (C-1)
20.6.18 Define triage and describe the principles of triage. (C-1)
20.6.19 Describe the START (simple triage and rapid treatment) method of initial triage. (C-1)
20.6.20 Given a list of 20 patients with various multiple injuries, determine the appropriate triage priority with 90% accuracy. (C-3)
20.6.21 Given color coded tags and numerical priorities, assign the following terms to each: (C-1)
    a. Immediate
    b. Delayed
    c. Hold
    d. Deceased
20.6.22 Define primary and secondary triage. (C-1)
20.6.23 Describe when primary and secondary triage techniques should be implemented. (C-1)
20.6.24 Describe the need for and techniques used in tracking patients during multiple casualty incidents. (C-1)
20.6.25 Describe techniques used to allocate patients to hospitals and track them. (C-1)
20.6.26 Describe modifications of telecommunications procedures during multiple casualty incidents. (C-1)
20.6.27 List and describe the essential equipment to provide logistical support to MCI operations to include: (C-1)
    a. Airway, respiratory and hemorrhage control
    b. Burn management
    c. Patient packaging/immobilization
20.6.28 List the physical and psychological signs of critical incident stress. (C-1)
20.6.29 Describe the role of critical incident stress management sessions in MCIs. (C-1)
20.6.30 Describe the role of the following exercises in preparation for MCIs: (C-1)
    a. Table top exercises
    b. Small and large MCI drills

INCIDENT MANAGEMENT- AFFECTIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.6.31 Understand the rationale for initiating incident command even at a small MCI event. (A-1)
20.6.32 Explain the rationale for having efficient and effective communications as part of an incident command/management system. (A-1)
20.6.33 Explain why common problems of an MCI can have an adverse effect on an entire incident. (A-1)
20.6.34 Explain the organizational benefits for having standard operating procedures (SOPs) for using the incident management system or incident command system. (A-1)

INCIDENT MANAGEMENT- PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the provider will be able to:

20.6.35 Demonstrate the use of local/regional triage tagging system used for primary and secondary triage. (P-1)

20.6.36 Given a simulated tabletop multiple casualty incident, with 5-10 patients: (P-1)
- a. Establish unified or singular command
- b. Conduct a scene assessment
- c. Determine scene objectives
- d. Formulate an incident plan
- e. Request appropriate resources
- f. Determine need for ICS expansion and groups
- g. Coordinate communications and group leaders
- h. Coordinate outside agencies

20.6.37 Demonstrate effective initial scene assessment and update (progress) reports. (P-1)

20.6.38 Given a classroom simulation of an MCI with 5-10 patients, fulfill the role of triage group leader. (P-3)

20.6.39 Given a classroom simulation of an MCI with 5-10 patients, fulfill the role of treatment group leader. (P-3)

20.6.40 Given a classroom simulation of an MCI with 5-10 patients, fulfill the role of transportation group leader. (P-3)

HAZARDOUS MATERIALS UNIT TERMINAL OBJECTIVE

20.7. At the completion of this unit, the provider will be able to evaluate hazardous materials emergencies, call for appropriate resources, and work in the cold zone.

HAZARDOUS MATERIALS COGNITIVE OBJECTIVES

At the completion of this unit, the provider will be able to:

20.7.1 Explain the role of the provider/EMS responder in terms of the following: (C-1)
- a. Incident size-up

20.7.2 Assessment of toxicologic risk

20.7.3 Appropriate decontamination methods

20.7.4 Treatment of semi-decontaminated patients

20.7.5 Transportation of semi-decontaminated patients

20.7.6 Size-up a hazardous materials (haz-mat) incident and determine the following: (C-1)

20.7.7 Potential hazards to the rescuers, public and environment

20.7.8 Potential risk of primary contamination to patients

20.7.9 Potential risk of secondary contamination to rescuers

20.7.10 Identify resources for substance identification, decontamination and treatment information including the following: (C-1)
- a. Poison control center
- b. Medical control
- c. Material safety data sheets (MSDS)
- d. Reference textbooks
- e. Computer databases (CAMEO)
- f. CHEMTREC
- g. Technical specialists
- h. Agency for toxic substances and disease registry

20.7.11 Explain the following terms/concepts: (C-1)
- a. Primary contamination risk
- b. Secondary contamination risk

20.7.12 List and describe the following routes of exposure: (C-1)
- a. Topical
- b. Respiratory

c. Gastrointestinal
d. Parenteral

20.7.13 Explain the following toxicologic principles: (C-1)
a. Acute and delayed toxicity
b. Route of exposure
c. Local versus systemic effects
d. Dose response
e. Synergistic effects

20.7.14 Explain how the substance and route of contamination alters triage and decontamination methods. (C-1)

20.7.15 Explain the limitations of field decontamination procedures. (C-1)

20.7.16 Explain the use and limitations of personal protective equipment (PPE) in hazardous material situations. (C-1)

20.7.17 List and explain the common signs, symptoms and treatment for the following substances: (C-1)
a. Corrosives (acids/alkalis)
b. Pulmonary irritants (ammonia/chlorine)
c. Pesticides (carbamates organophosphates)
d. Chemical asphyxiants (cyanide/carbon monoxide)
e. Hydrocarbon solvents (xylene, methlyene chloride)

20.7.18 Explain the potential risk associated with invasive procedures performed on contaminated patients. (C-1)

20.7.19 Given a contaminated patient, determine the level of decontamination necessary and : (C-1)
a. Level of rescuer PPE
b. Decontamination methods
c. Treatment
d. Transportation and patient isolation techniques

20.7.20 Identify local facilities and resources capable of treating patients exposed to hazardous materials. (C-1)

20.7.21 Determine the hazards present to the patient and provider given an incident involving hazardous materials. (C-2)

20.7.22 Define the following and explain their importance to the risk assessment process: (C-1)
a. Boiling point
b. Flammable/explosive limits
c. Flash point
d. Ignition temperature
e. Specific gravity
f. Vapor density
g. Vapor pressure
h. Water solubility
i. Alpha radiation
j. Beta radiation
k. Gamma radiation

20.7.23 Define the toxicologic terms and their use in the risk assessment process: (C-1)
a. Threshold limit value (TLV)
b. Lethal concentration and doses (LD)
c. Parts per million/billion (ppm/ ppb)
d. Immediately dangerous to life and health (IDLH)
e. Permissible exposure limit (PEL)

f. Short term exposure limit (TLV-STEL)
g. Ceiling level (TLV-C)

20.7.24 Given a specific hazardous material be able to do the following: (C-1)
a. Research the appropriate information about its physical and chemical characteristics and hazards
b. Suggest the appropriate medical response
c. Determine risk of secondary contamination

20.7.25 Determine the factors which determine where and when to treat a patient to include: (C-1)
a. Substance toxicity
b. Patient condition
c. Availability of decontamination

20.7.26 Determine the appropriate level of PPE to include: (C-1)
a. Types, application, use and limitations
b. Use of chemical compatibility chart

20.7.27 Explain decontamination procedures when functioning in the following modes: (C-1)
a. Critical patient rapid two step decontamination process
b. Non-critical patient eight step decontamination process

20.7.28 Explain specific decontamination procedures. (C-1)

20.7.29 Explain the four most common decontamination solutions used to include: (C-1)
a. Water
b. Water and tincture of green soap
c. Isopropyl alcohol
d. Vegetable oil

20.7.30 Identify the areas of the body difficult to decontaminate to include: (C-1)
a. Scalp/hair
b. Ears/ear canals/nostrils
c. Axilla
d. Finger nails
e. Navel
f. Groin/buttocks/genitalia
g. Behind knees
h. Between toes, toe nails

20.7.31 Explain the medical monitoring procedures of hazardous material team members to be used both pre- and post-entry, to include: (C-1)
a. Vital signs
b. Body weight
c. General health
d. Neurologic status
e. ECG

20.7.32 Given a simulated hazardous substance, use reference material to determine the appropriate actions. (C-3)

20.7.33 Integrate the principles and practices of hazardous materials response in an effective manner to prevent and limit contamination, morbidity, and mortality

HAZARDOUS MATERIALS AFFECTIVE OBJECTIVES

None identified for this unit.

HAZARDOUS MATERIALS PSYCHOMOTOR OBJECTIVES

At the completion of this unit, the provider will be able to:

20.7.34 Demonstrate the donning and doffing of appropriate PPE. (P-1)
20.7.35 Set up and demonstrate an emergency two step decontamination process. (P-1)